

1994

# Virginia Commonwealth University Medical College of Virginia Bulletin

Virginia Commonwealth University

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V I R G I N I A  
C O M M O N W E A L T H  
U N I V E R S I T Y

1994-1996 ▼ MEDICAL COLLEGE OF VIRGINIA ▼ BULLETIN

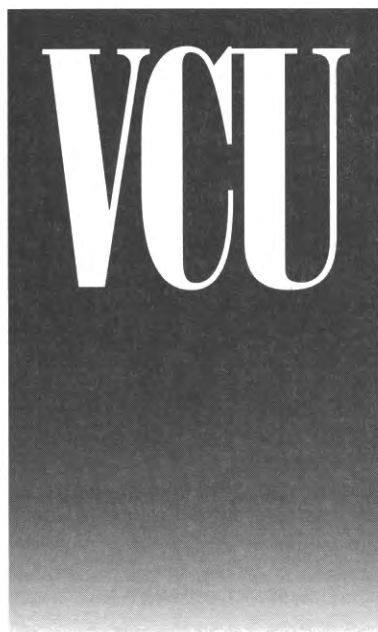






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Virginia Commonwealth University

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RICHMOND, VIRGINIA



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### LIMITATIONS ON BULLETIN PROVISIONS

All rules and regulations set forth in this bulletin will apply until further notice. The university reserves the right to make changes in courses of study, fees, rules, and regulations governing the conduct of the work in all schools and programs, faculty and staff, and classification of students whenever university authorities deem it expedient or wise to do so.

# University Calendar

## Summer Session 1994

### May

Monday	23	Summer sessions begins
Monday-Friday	23-June 10	3-week summer pre-session
Monday-Thursday	23-June 23	5-week summer pre-session
Monday	30	Memorial Day holiday
Tuesday/Wednesday	31/June 1	8-week evening summer session
Wednesday/Thursday	July 20/21	

### June

Monday-Wednesday	20-July 20	4 1/2-week summer session
Monday-Thursday	20-July 28	6-week summer session
Monday/Tuesday	20/21	8-week evening summer session
Wednesday/Thursday	Aug. 10/11	
Monday-Thursday	27-July 28	5-week summer session

### July

Friday	1	Last day for summer degree candidates to submit graduation applications to their advisors for August degrees
Monday	4	Independence Day Holiday
Tuesday	5	Evening Studies Registration for Fall semester begins
Thursday-Friday	21-Aug. 19	4 1/2-week summer session

### August

Monday-Friday	1-19	3-week post session
Friday	19	Summer sessions end

## Fall 1994 Beginning Dates

### August

Thursday	25	Classes begin at 8:00 am—MCV Campus
Monday	29	Classes begin at 8:00 am—Academic Campus

**Fall 1994****August**

Monday-Wednesday	22-24	MCV Campus Orientation and Registration
Monday-Friday	22-26	Orientation and Advising for Academic Campus students
Tuesday	23	University Faculty meeting—both campuses, 3:00 pm
Thursday	25	Registration for New, Transfer, Readmit Day students —Academic Campus
Thursday	25	Evening studies registration
Friday	26	Classes begin at 8:00 am—MCV Campus
Thursday-Thursday	25-Sep. 1	Registration, Continuing Day students—Academic Campus
Saturday	27	Add/Drop and Late Registration—MCV Campus
Monday	29	Official date for certifying August diploma
Monday-Thursday	29-Sep. 1	Classes begin at 8:00 am—Academic Campus
		Add/Drop and Late Registration—Academic Campus

**September**

Monday	5	Labor Day Holiday
Friday	23	Last day for fall degree candidates to submit graduation applications for December degrees
Tuesday	27	Last day for undergraduate students to submit work for removal of incompletes from Spring semester or Summer sessions —Academic Campus

**October**

Friday	21	Last day to drop a course with a mark of "W"—both campuses (except for courses not scheduled for the full semester)
Monday-Friday	24-Nov. 4	Advising for Spring semester

**November**

Friday	4	Founders Day
Monday	7	Spring semester Advance Registration begins for all students (including Evening students)
Wednesday	23	Thanksgiving holiday begins at 5:00 pm—No evening classes will meet
Monday	28	Thanksgiving holiday ends at 8:00 am

**December**

Friday	9	Last day of classes for fall semester—both campuses
Monday-Friday	12-16	Evening Studies Saturday classes meet December 10
Monday-Saturday	12-17	Final examinations for Fall semester—MCV Campus
Monday-Tuesday	12-20	Final examinations for Fall semester—Evening Studies classes
Tuesday	20	Final examinations for Fall semester—Academic Campus Day classes
Saturday	24	Holiday vacation begins at 5:00 pm
Friday-Monday	23-26	Official date for certifying December diploma
		Christmas Holiday

## Summer Session 1996

### May

Monday-Friday	20-June 7	3-week summer pre-session
Monday-Thursday	20-June 20	5-week summer pre-session
Monday	27	Memorial Day holiday
Tuesday/Wednesday	28/29	8-week evening summer session
Wednesday/Thursday	July 17/18	

### June

Monday-Wednesday	17-July 17	4 1/2-week summer session
Monday-Thursday	17-July 25	6-week summer session
Monday/Tuesday	17/18	8-week evening summer session
Wednesday/Thursday	Aug. 7/8	
Monday-Thursday	24-July 25	5-week summer session
Friday	28	Last day for summer degree candidates to submit graduation applications to their advisors for August degrees

### July

Thursday	4	Independence Day Holiday
Friday	5	Evening Studies Registration for Fall semester begins
Thursday-Friday	18-Aug. 16	4 1/2-week summer session
Monday-Friday	29-Aug. 16	3-week post session

### August

Friday	16	Summer sessions end
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## Fall 1996 Beginning Dates

### August

Thursday	22	Classes begin at 8:00 am—MCV Campus
Monday	26	Classes begin at 8:00 am—Academic Campus

**December (continued)**

Tuesday	27	Holiday Intersession classes begin
Friday	30	New Year's Eve Holiday

**January**

Monday	2	New Year's Day Holiday
Saturday	7	Holiday Intersession classes end
Tuesday-Friday	10-13	Orientation and advising for Academic Campus students
Thursday	12	Registration for New, Transfer, Readmitted Day students—both campuses
		Evening Studies Registration
Friday	13	Registration, Continuing Day students—Academic Campus
Monday	16	Martin Luther King Day (Also state holiday—Lee/Jackson/King Day)
Tuesday	17	Classes begin at 8:00 am—both campuses
Tuesday-Thursday	17-19	Add/Drop and Late Registration for all students
Friday	27	Last day for Spring degree candidates to submit graduation applications to their advisors for May degrees

**February**

Wednesday	8	Convocation
Wednesday	15	Last day for undergraduate students to submit work for removal of incompletes for Fall semester—Academic Campus

**March**

Friday	10	Last day to drop a course with a mark of "W"—both campuses (except for courses not scheduled for the full semester)
Saturday	11	Spring vacation begins at noon—both campuses
Monday	21	Spring vacation ends at 8:00 am—both campuses
		Summer Advance Registration begins—Academic Campus
Monday-Friday	20-31	Advising for Fall semester

**April**

Monday	3	Fall semester Advance Registration begins for all students (including Evening students)
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**May**

Tuesday	2	Day classes end for spring semester—Academic Campus —Evening classes continue through May 6
Wednesday	3	Study day—Academic Campus day classes
Thursday-Friday	4-12	Final examinations for Spring semester—Academic Campus day classes
Friday	5	Last day of classes for Spring semester—MCV Campus
Monday-Friday	8-12	Final examinations for Spring semester—MCV Campus
Monday-Saturday	8-13	Final examinations for Spring semester—Evening Studies classes
Saturday	20	Commencement (including August and December graduates)
Monday	22	Summer sessions begin



**Summer Session 1995****May**

Monday-Friday	22-June 9	3-week summer pre-session
Monday-Thursday	22-June 22	5-week summer pre-session
Monday	29	Memorial Day holiday
Tuesday/Wednesday	30/31	8-week evening summer session
Wednesday/Thursday	July 19/20	

**June**

Monday-Wednesday	19-July 19	4 1/2-week summer session
Monday-Thursday	19-July 27	6-week summer session
Monday/Tuesday	19/20	8-week evening summer session
Wednesday/Thursday	Aug. 9/10	
Monday-Thursday	26-July 27	5-week summer session
Friday	30	Last day for summer degree candidates to submit graduation applications to their advisors for August degrees

**July**

Tuesday	4	Independence Day Holiday
Wednesday	5	Evening Studies Registration for Fall semester begins
Thursday-Friday	20-Aug. 18	4 1/2-week summer session
Monday-Friday	31-Aug. 18	3-week post session

**August**

Friday	18	Summer sessions end
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**Fall 1995 Beginning Dates****August**

Thursday	24	Classes begin at 8:00 am—MCV Campus
Monday	28	Classes begin at 8:00 am—Academic Campus

**Fall 1995****August**

Monday-Wednesday	21-23	MCV Campus Orientation and Registration
Monday-Friday	21-25	Orientation and Advising for Academic Campus students
Tuesday	22	University Faculty meeting—both campuses, 3:30 pm
Thursday	24	Registration for New, Transfer, Readmit Day students —Academic Campus
		Evening studies registration
Thursday	24	Classes begin at 8:00 am—MCV Campus
Friday	25	Registration, Continuing Day students—Academic Campus
Thursday-Thursday	24-31	Add/Drop and Late Registration—MCV Campus
Saturday	26	Official date for certifying August diploma
Monday	28	Classes begin at 8:00 am—Academic Campus
Monday-Thursday	28-31	Add/Drop and Late Registration—Academic Campus

**September**

Monday	4	Labor Day Holiday
Friday	22	Last day for fall degree candidates to submit graduation applications for December degrees
Tuesday	26	Last day for undergraduate students to submit work for removal of incompletes from Spring semester or Summer sessions —Academic Campus

**October**

Friday	20	Last day to drop a course with a mark of "W"—both campuses (except for courses not scheduled for the full semester)
Monday-Friday	23-Nov. 3	Advising for Spring semester

**November**

Friday	3	Founders Day
Monday	6	Spring semester Advance Registration begins for all students (including Evening students)
Wednesday	22	Thanksgiving holiday begins at 5:00 pm—No evening classes will meet
Monday	27	Thanksgiving holiday ends at 8:00 am

**December**

Friday	8	Last day of classes for fall semester—both campuses Evening Studies Saturday classes meet December 9
Monday-Friday	11-15	Final examinations for Fall semester—MCV Campus
Monday-Saturday	11-16	Final examinations for Fall semester—Evening Studies classes
Monday-Tuesday	11-19	Final examinations for Fall semester—Academic Campus Day classes
Tuesday	19	Holiday vacation begins at 5:00 pm
Saturday	23	Official date for certifying December diploma
Monday-Tuesday	25-26	Christmas Holiday

**December** (continued)

Wednesday	27	Holiday Intersession classes begin
Friday	29	New Year's Eve Holiday

**January**

Monday	1	New Year's Day Holiday
Saturday	9	Holiday Intersession classes end
Tuesday-Friday	9-12	Orientation and advising for Academic Campus students
Thursday	11	Registration for New, Transfer, Readmitted Day students—both campuses
Friday	12	Evening Studies Registration
Monday	15	Registration, Continuing Day students—Academic Campus
		Martin Luther King Day
		(Also state holiday—Lee/Jackson/King Day)
Tuesday	16	Classes begin at 8:00 am—both campuses
Tuesday-Thursday	16-18	Add/Drop and Late Registration for all students
Friday	26	Last day for Spring degree candidates to submit graduation applications to their advisors for May degrees

**February**

Wednesday	7	Convocation
Wednesday	14	Last day for undergraduate students to submit work for removal of incompletes for Fall semester—Academic Campus

**March**

Friday	8	Last day to drop a course with a mark of "W"—both campuses (except for courses not scheduled for the full semester)
Saturday	9	Spring vacation begins at noon—both campuses
Monday	18	Spring vacation ends at 8:00 am—both campuses
		Summer Advance Registration begins—Academic Campus
Monday-Friday	18-29	Advising for Fall semester

**April**

Monday	1	Fall semester Advance Registration begins for all students (including Evening students)
Tuesday	30	Day classes end for spring semester—Academic Campus —Evening classes continue through May 4

**May**

Wednesday	1	Study day—Academic Campus day classes
Thursday-Friday	2-10	Final examinations for Spring semester—Academic Campus day classes
Friday	3	Last day of classes for Spring semester—MCV Campus
Monday-Friday	6-10	Final examinations for Spring semester—MCV Campus
Monday-Saturday	6-11	Final examinations for Spring semester—Evening Studies classes
Saturday	18	Commencement (including August and December graduates)
Monday	20	Summer sessions begin



**Dear Health Professions Student:**

It is my pleasure to welcome you to Virginia Commonwealth University.

The Medical College of Virginia has a distinguished history in education in the health sciences in Virginia, beginning with its inception as the medical department of Hampden-Sydney College in 1838. Today, the Medical College of Virginia Campus is part of a thriving diverse institution; the University, in fact, is Virginia's largest public urban university. Diversity may be found in its multicultural student body and faculty, its multifaceted architecture, and its multidisciplinary academic offerings.

This bulletin introduces you to the health sciences programs available at VCU. It contains complete and comprehensive information regarding program requirements and standards and may be used both by prospective students wishing to learn more about the health sciences programs offered by the University and by enrolled students as they work to complete their degrees.

The MCV Campus encompasses the Schools of Allied Health Professions, Dentistry, Medicine, Nursing, and Pharmacy, and the Medical College of Virginia Hospitals, the fourth largest teaching health care complex in the country. The University also supports a comprehensive cancer treatment center and extensive research facilities in which health sciences faculty conduct biomedical and biotechnical research projects funded at more than \$66 million annually.

As a major academic health sciences center, the Medical College of Virginia of Virginia Commonwealth University offers students a challenging environment in which to prepare for a career in health sciences and health care. We are proud to have you here as you pursue your professional education.

Sincerely,

*Eugene P. Trani*

Eugene P. Trani  
President

# PART I

## GENERAL ▼ INFORMATION

### THE UNIVERSITY

**V**irginia Commonwealth University is a state-supported institution with an enrollment of more than 21,800 undergraduate, graduate, and health professions students studying on its two campuses in Richmond, Virginia. The Medical College of Virginia Campus is located near the financial, governmental, and shopping areas of downtown Richmond; the Academic Campus is two miles west in Richmond's historic Fan District, a residential area which dates from the nineteenth century.

The University takes its founding date as 1838, the year in which the Medical College of Virginia was created as the medical department of Hampden-Sydney College. MCV became an independent institution in 1854 and state-affiliated in 1860.

VCU's Academic Campus began in 1917 as the Richmond School of Social Work and Public Health. In 1925, it became the Richmond Division of the College of William and Mary; and in 1939, its name was changed to Richmond Professional Institute of the College of William and Mary, from which it separated in 1962 to become an independent state institution.

In 1968, the two institutions merged to form Virginia Commonwealth University: the undergraduate, graduate, and professional programs of Richmond Professional Institute joined with one of the largest and most comprehensive medical centers on the East Coast to create a major state university.

VCU boasts a diverse student body and one of the largest evening colleges in the United States. The University's level of funded research places it 67th in the country in attracting federal research support for 1991, the latest year for which the National Science Foundation has published data. Its faculty, representing the finest American and foreign graduate institutions, enhance VCU's position among the important institutions of higher learning in the United States through their work in the classroom, the laboratory, the hospital, and as published in scholarly journals. VCU maintains active communications with its growing cadre of alumni and enjoys a cooperative and stimulating relationship with the city of Richmond. This relationship encompasses the arts, the business community, the architectural community, and local government. Today VCU operates a major teaching hospital and is composed of a college, 11 schools, and the School of Graduate Studies. These academic units offer 55 undergraduate, 64 master's, 21 doctoral, two first-professional degree programs, and 15 post-baccalaureate certificate programs.

VCU's location in Richmond affords its students the benefits of living in one of the South's most cosmopolitan cities. Located in central Virginia, Richmond is a two-hour drive from the Atlantic seashore to the east, Appalachian mountain recreational sites to the west, and Washington, D.C. to the north. A wide range of cultural, educational, and recreational facilities and activities is available in the Richmond area, including a full performance schedule at VCU's own Performing Arts Center. VCU's proximity to



downtown Richmond, which is Virginia's capital and a major East Coast financial and manufacturing center, provides students with opportunities for part-time employment and student housing in a variety of settings.

## ACADEMIC COMPOSITION OF THE UNIVERSITY

VCU is composed of the following colleges and schools:

- College of Humanities and Sciences including the School of Mass Communications
- School of Allied Health Professions
- School of the Arts
- School of Business
- School of Community and Public Affairs
- School of Dentistry
- School of Education
- School of Graduate Studies
- School of Medicine
- School of Nursing
- School of Pharmacy
- School of Social Work

## THE MEDICAL COLLEGE OF VIRGINIA

The Medical College of Virginia of Virginia Commonwealth University was founded on December 1, 1837, when the president and trustees of Hampden-Sydney College created a medical department in Richmond. This medical department became the Medical College of Virginia (MCV), an independent institution, in 1854. In 1860, when Virginia appropriated \$30,000 for MCV's first hospital, Old Dominion Hospital, MCV became a state-supported institution.

The first outpatient clinic was established in 1867.

In 1893 a second medical college, the College of Physicians and Surgeons, was established just two blocks from the Egyptian Building, MCV's oldest building. In 1894 its name was changed to the University College of Medicine. This college and MCV were consolidated in 1913.

MCV today consists of the Schools of Allied Health Professions, Dentistry, Medicine, Nursing, and Pharmacy. The Massey Cancer Center was added in 1974.

About 3,500 students, interns, residents, and postdoctoral fellows receive education in the health sciences on the MCV Campus. Presently, the MCV Hospitals are authorized to maintain a bed complement of 902.

## MISSION OF THE UNIVERSITY

*Virginia Commonwealth University* is a public, urban, research university, supported by the

Commonwealth of Virginia to serve the people of the Commonwealth and the nation. The University provides a fertile and stimulating environment for learning, teaching, research, creative expression, and public service. Essential to the life of the University is a faculty actively engaged in scholarship and creative exploration—activities that increase knowledge and understanding of the world, and inspire and enrich teaching.

The University is dedicated to educating full- and part-time students of all ages and diverse backgrounds in an atmosphere of free inquiry and scholarship, so they may realize their full potential as informed, productive citizens with a life-long commitment to learning and service.

The University serves the local, state, national, and international communities through its scholarly activities, its diverse educational programs, and its public service activities. As an institution of higher learning in a metropolitan center that is also the capital of the Commonwealth, the University enjoys unique resources that enrich its programs and offer special opportunities for contributing its intellectual and creative expertise in the development of innovative approaches to meet the changing needs of our society.

The goals of Virginia Commonwealth University in carrying out its mission are to

- provide undergraduate education that includes a broad and rigorous foundation in the arts, sciences and humanities, and explores the ideas and values of humankind;
- offer nationally and internationally recognized professional and graduate programs leading to doctoral, master's, and other terminal and advanced degrees in the professions, the sciences, the humanities, and the arts;
- foster a scholarly climate that inspires creativity, a free and open exchange of ideas, critical thinking, intellectual curiosity, freedom of expression, and intellectual integrity;
- expand the boundaries of knowledge and understanding through research, scholarship, and creative expression in the sciences, arts, humanities, and the professional disciplines;
- value and promote racial and cultural diversity in its student body, faculty, administration, and staff to enhance and enrich the University;
- develop and sustain a faculty of the highest quality by providing an environment conducive to their achieving and maintaining national and international stature and by continuing to attract both recognized scholars and outstanding individuals with a high potential for scholarly achievement and excellence in teaching;

- provide an optimal environment for educating and training health care professionals, for conducting research to improve health care and delivery, and for meeting the needs of patients and the community in a comprehensive health care setting;
- use the urban environment as a laboratory for studying and developing new approaches to problems pertaining to the public and private sectors;
- support, through its commitment to public exhibitions, performances, and other cultural activities, the imaginative power of the liberal, visual, and performing arts to express the problems and aspirations of humanity and to enrich the lives of individuals;
- develop innovative programs for continuing education that establish permanent intellectual connections between the University and its constituents, enhance professional competence, and promote dialogue on public issues;
- offer diverse opportunities for individuals to benefit from higher education through a variety of avenues to include flexible scheduling for part-time undergraduate and graduate students, open admission for nondegree-seeking students with appropriate preparation, advanced degree programs for working professionals, selected programs in diverse locales, admission for graduates with appropriate associate degrees of arts or sciences, and support programs for specially admitted students;
- promote interdisciplinary studies within the University to bring new perspectives to bear on complex problems; and
- mobilize its creative energies and its expertise to meet the needs of society and individuals in its unique role as Virginia's major urban university.

### MCV CAMPUS MISSION

The Medical College of Virginia Campus is an integral part of Virginia Commonwealth University, a comprehensive urban-based public institution of higher education. The five academic schools and the teaching hospitals of the Medical College of Virginia Campus exist primarily to serve the needs of the citizens of Virginia for

- Transmittal of knowledge related to the health services;
- Continuity in the supply of health manpower;
- Accessibility to comprehensive and quality health-care services;
- Development and dissemination of new knowledge for the advancement of the health sciences.

Cognizant of the societal nature of these needs and its public trust, the Medical College of Virginia

Campus is committed to serving these needs in the most effective and efficient manner possible.

### Education

The Medical College of Virginia Campus is committed to educational programs directed toward providing graduates capable of meeting the state's health needs. Programs are dedicated to maintaining and updating competency of health professionals as well as preparing graduates to enter the health professions. Educational programs are supported by several academic disciplines, the teaching hospital, carefully selected off-campus health facilities, and an institutional commitment to effective teaching.

### Service

The Medical College of Virginia Campus is committed to a comprehensive program of patient care: to demonstrate excellence in practice as a model for students, to provide a base for study designed to improve patient care, to meet needs of patients in its hospital's service area, and to offer highly specialized services in clinical areas of demonstrated expertise.

### Research

The Medical College of Virginia Campus is committed to research programs, to develop new knowledge from studies ranging from the molecular level through clinical procedures to health care delivery and outcomes, to model for students a spirit of inquiry and the application of the scientific process to patient care, and to focus interdisciplinary effort on problems amenable to the scientific approach.

### Accreditation

Virginia Commonwealth University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award the associate, baccalaureate, masters-level, doctoral and first professional degrees described in this bulletin. All schools and courses on the MCV Campus are accredited by the agencies and organizations appropriate to the school or course concerned.

### ALUMNI OF THE UNIVERSITY

VCU has more than 87,000 alumni of whom over 29,000 are graduates of the *MCV Campus*. These alumni live in each of the states and more than 50 foreign countries. The Alumni Activities Office at 310 North Shafer Street and the MCV Alumni House are the focal points for alumni

planning and events and serve as resource centers for those who studied here.

Through the annual fund and recently completed capital campaign which raised \$63 million, alumni have demonstrated their support for the University. Celebration in 1993 of the centennial anniversaries of both the Schools of Dentistry and Nursing renewed alumni commitment while the School of Medicine has begun a new effort to increase its scholarship endowment.

The Medical College of Virginia Alumni Association of Virginia Commonwealth University has for over a century supported the institution through services and programs for alumni and students, communication in the *SCARAB* alumni magazine, and fund raising. The Association's more than 4,000 dues-paying members have recently completed construction of a new alumni house at the corner of 11th and Clay Streets. The building, a replica of the historic Maupin-Maury House, is home for the Association's staff while its beautiful parlors and elegant board room are the site of daily meetings, conferences, and social events for faculty, staff, students, and alumni. The Alumni Association is in the first phase of a new campaign to raise \$1.4 million to construct a meeting center adjacent to the alumni house.

For information about the Association's programs such as Reunion Weekend, Parents and Partners Day, alumni receptions at professional gatherings, regional alumni meetings, *SCARAB* magazine, special group insurances, credit card, calling card, and other services please call either (804) 828-3900 or 1-800-628-7799, fax (804) 828-4594, or stop by the Maupin-Maury House at 1016 East Clay Street. Address alumni information and updates to Alumni Activities, MCV Alumni Association of VCU, P.O. Box 980156, Richmond, VA 23298.

## MEDICAL COLLEGE OF VIRGINIA HOSPITALS

MCV Hospitals and the physicians on the faculty of the MCV/VCU School of Medicine are regional leaders in patient care, clinical and basic research, and graduate medical education. The medical complex located on the MCV Campus in Richmond provides the full spectrum of medical services, from primary to quaternary care. It serves as a Level I Trauma Center and a referral center for the Southeast. With 847 physicians (706 of whom are board-certified in their specialties), 902 licensed beds, annual inpatient admissions of more than 35,000, emergency department admissions of over 111,000, and outpatient clinical visits of close

to 350,000, MCV is one of the nations' largest academic medical centers. As a regional referral center, MCV responds to more than 18,000 physician consultation calls and 24,000 patient-service calls from physicians each year. Patient care is further diversified through an affiliation with the McGuire Veterans Affairs Medical Center and Children's Hospital in Richmond.

MCV Hospitals and physicians receive over \$60 million in research funding each year. The Clinical Research Center at MCV Hospitals is one of 74 general clinical research centers funded by the National Institutes of Health to study the mechanisms of disease and the effectiveness of newly developed treatments. Highlights of recent research at MCV include authoritative and new ground-breaking studies of the genetics of schizophrenia; research on brain injury, stroke, and epilepsy; development of cancer-fighting drugs; and studies of AIDS and substance abuse in pregnant and non-pregnant women.

High technology at MCV enhances clinical research, patient care, and medical education. For example, the Department of Radiology provides diagnostic imaging services using the most advanced equipment, including whole-body magnetic resonance imaging (MRI) scanners and computed tomography (CT) scanners. In the Division of Radiation Physics and Biology, a high-field MRI and spectroscopy systems is the basis for fundamental research in such areas as head injury, cardiovascular disease, and cancer. The Department of Radiation Oncology uses linear accelerators, treatment-planning computers, simulators, and remote after-loading equipment in the treatment of cancer and benign tumors.

MCV Hospitals and physicians offer numerous specialized services not generally found outside of academic medical centers. Among these innovative services are fetal surgery, pediatric neuro-oncology, brain-injury rehabilitation, neonatal and pediatric heart surgery, prenatal diagnostic, infertility treatment, status epilepticus treatment and epilepsy surgery, bone marrow transplantation, wound healing, *outpatient AIDS* treatment, and rural cancer outreach.

MCV Hospitals and physicians provide comprehensive ambulatory (outpatient) care, including outpatient surgery and preoperative screening, and the expertise of over 600 faculty physicians covering the complete range of medical and surgical specialties. To enhance convenient, comprehensive care for the entire family, MCV operates several satellite outpatient practices, including a multispecialty group practice in The Park at Stony Point on Richmond's Southside.

Throughout its history, MCV's mission as a nonprofit teaching institution has been to join in the delivery of care to all in need, to pioneer major advances in medicine, and to educate and train the new generations of practitioners and medical researchers. In 1992-93, MCV Hospitals and physicians provided \$73 million worth of care to uninsured or underinsured patients in central Virginia.

### MCV CAMPUS MULTIDISCIPLINARY CENTERS

The Massey Cancer Center, MCV Center for Primary Care, MCV Heart Center, MCV Neuroscience Center, and MCV Transplant Center are multidisciplinary centers designed to promote excellent patient-centered care, stimulate new outcomes-based and bench research, and accelerate the application of such research advances to the clinical setting. Working together with community physicians and other health care providers, the Multidisciplinary Centers support:

- an increased understanding of appropriate and available patient treatment options;
- primary, specialty, and subspecialty services to meet community provider needs; and
- an environment focused on ensuring continuity of patient care between community providers and members of the Academic Medical Center.

### Massey Cancer Center

The Massey Cancer Center, a National Cancer Institute designated cancer center, is a focal point for basic and clinical cancer research and cancer health care delivery at Virginia Commonwealth University. Massey Cancer Center programs involve many facets of the University's academic life and encompass all schools of the MCV Campus as well as departments on the Academic Campus. Basic research activities are organized into specific program areas. Each consists of a group of investigators with common scientific interests who collaborate in cancer-related research, applying diverse technologies and perspectives. Basic research programs are: 1) developmental therapeutics (preclinical and clinical), 2) cell growth and differentiation, 3) immune mechanisms, 4) infections in immunodeficient states, 5) carcinogenesis and experimental tumor biology, 6) neuro-oncology.

The Massey Cancer Center operates and subsidizes a variety of core facilities that provide complex technologies and services to basic and clinical scientists at Virginia Commonwealth

University. These include: the flow cytometry facility; the hybridoma-monoclonal antibody laboratory for the development and purification of monoclonal antibodies; a nucleic acid synthesis and analysis facility that analyzes and constructs molecular probes essential for modern research; an athymic nude mouse facility that breeds and makes available nude mice to research scientists; the bone marrow transplantation research laboratory that brings together basic and clinical scientists with diverse perspectives to apply new developments and technologies in their fields to problems relevant to human bone marrow transplantation; a molecular biology laboratory designed to meet the needs of investigators who require access to molecular genetic techniques such as Northern and Southern blotting, plasmid and phage production, and simple sub-cloning procedures; a human tissue acquisition and histopathology laboratory that provides a central facility and personnel to retrieve and store tissues for investigation; a structural molecular biology, molecular modeling, and computer-assisted drug design facility that applies x-ray crystallography, molecular modeling, computational chemistry, and high dimensional nuclear magnetic resonance to support a variety of research projects that explore the structure of regulatory proteins, enzymes, and nucleic acids; a biostatistics facility that provides consultative services for statistical analyses in the design and interpretation of basic and clinical studies; and a clinical research facility which provides data management and coordinative support for all clinical investigative activities.

There are extensive clinical service and research programs at the Massey Cancer Center. Special outpatient clinics focus on multi-disciplinary approaches to the management of patients with malignant diseases and encompass faculty in the Departments of Internal Medicine, Obstetrics and Gynecology, Pathology, Pediatrics, Surgery, Radiation Oncology, and Radiology. The Breast Health Center provides comprehensive diagnostic and therapeutic services, with emphasis on conservative breast management and participation in high priority clinical trials. There are other multispecialty clinics in the areas of chest tumors, gastrointestinal tumors, genitourinary tumors, and neuro-oncology. There are dedicated inpatient units in hematology/oncology, surgical oncology, and gynecologic oncology. The Bone Marrow Transplantation Service offers allogeneic and autologous transplantation to adult and pediatric patients. Oncology clinical nurse

specialists support the center's programs. The Cancer Rehabilitation and Continuing Care Program works with patients to facilitate their rapid return to home and occupation. Comprehensive home health and hospice services are available if additional assistance is required for patients at home.

The Cancer Control Program develops new approaches to address the cancer-related needs of disadvantaged populations. One component is the Rural Cancer Outreach Program, which is developing new approaches to the delivery of cancer health care to populations living far from the university center. Community-based programs are being developed at rural outreach sites, providing individual and group support and the mobilization of resources to assist patients and their families.

The Outreach Program delivers state-of-the-art cancer care and technology to rural Virginia communities. Medical and nursing specialists work side-by-side with members of the health care teams in the rural areas to provide training so that patients with cancer can have treatment in their own communities near their homes and workplaces. The Cancer Outreach Program also provides a clinical laboratory for evaluation of primary, secondary, and tertiary interventions. The minority-based Community Clinical Oncology Program implements cancer prevention and treatment trials in minority, rural, and urban populations who are under-represented in clinical studies and have poor access to optimal care. The Virginia Cancer Patient Data System links traditional tumor registry information with sociodemographic and health-care financing data. This epidemiologic laboratory permits analyses of patterns of care in rural and urban locations and the costs of treating cancer patients with the ability to target new prevention and treatment programs more precisely.

The Cancer Decision Analysis Team is a multi-specialty group of investigators using the techniques of decision and data-analysis to examine areas of controversy in cancer treatment. This novel approach measures clinical effectiveness, quality of life parameters, costs of treatments, and may play an important role in the development of health policy. A cancer education program focuses on innovative new approaches to the delivery of information on cancer prevention, early detection, and treatment to the large population of citizens of the Commonwealth with limited reading skills. The Patient-Family Resource Library is an integral part of the multifac-

eted educational approach. Providing comprehensive consumer based information through print, on-line and interactive services, the library sends information nationwide to persons experiencing cancer. The National Cancer Institute-designated Cancer Information Services provides a telephone link (1-800-4-CANCER) between the Center and all Virginians for the dissemination of information about cancer, with a particular focus on the geographic areas that surround rural Massey Cancer Center satellites.

### **MCV Center for Primary Care**

The MCV Center for Primary Care coordinates the primary care services at MCV. MCV offers broad clinical services, student and resident education, and primary care research activities. Primary care patients can be seen on and off campus and referral to primary care physicians for management of hospital care can be arranged.

### **MCV Heart Center**

The MCV Heart Center offers comprehensive diagnostic and treatment services for patients with various types of cardiovascular disease. In addition to general adult and pediatric cardiology, specialty services include adult and pediatric cardiac catheterization, coronary angioplasty, non-invasive testing, electrophysiology, chest pain care, congestive heart failure/transplantation, adult and pediatric cardiac surgery, adult and pediatric thoracic surgery and vascular surgery. The Heart Center is renowned for pioneering work in heart transplantation and other therapeutic approaches to heart failure.

### **MCV Neuroscience Center**

The clinical section of the MCV Neuroscience Center is comprised of specialties in the areas of neurology, neurosurgery, physical medicine and rehabilitation, psychiatry, pain management, neuro-radiology, neuro-pathology, and pediatric neuroscience who provide comprehensive diagnostic and treatment services for patients and consultation services to referring physicians. Areas of specialization include: epilepsy and surgical epilepsy, neuro-oncology, back and spine, brain and spinal cord injury, gero-psychiatry and pediatric neuroscience.

### **MCV Transplant Center**

The MCV Transplant Center offers comprehensive medical and surgical transplantation services for patients with end-stage organ failure and patients with certain cancers. All relevant



transplantation services are offered within the context of the Academic Medical Center; these include on-site histocompatibility testing, marrow processing, and infectious disease, pathology, psychosocial, and nursing support. Transplant Center physicians are clinical and research leaders in the field of transplantation medicine and are supported by the latest in technology and facilities.

### DIETETIC INTERNSHIP

A post-baccalaureate, accredited dietetic internship is offered through the Medical College of Virginia Hospitals. Qualified applicants must have completed an undergraduate or graduate program in dietetics. For additional information contact the Dietetic Internship Director, Medical College of Virginia Hospitals, Virginia Commonwealth University, P.O. Box 980294, Richmond, VA 23298-0294.

### VIRGINIA STATEWIDE AREA HEALTH EDUCATION CENTERS PROGRAM

In 1991 Virginia Commonwealth University, the University of Virginia, the Medical College of Hampton Roads, the Virginia Primary Care Association, and the Virginia Department of Health together established the Virginia Statewide Area Health Education Centers (AHEC) Program to develop educational initiatives for attracting and retaining primary health care providers throughout Virginia's many underserved areas. The program is supported both by a federal grant award and by state funds.

By the end of 1995, it is expected that the program will have developed a statewide system of eight regional area health education centers to encompass all political jurisdictions in Virginia. Working with the three academic health centers collaborating in the Statewide AHEC Program, these community-based, regional AHECs will expand and improve efforts to recruit minority and disadvantaged students from underserved areas into the health professions, support clinical training rotations of medical, nursing, dental, allied health, and pharmacy students, and strengthen the professional practice environment for primary care providers through the provision of continuing education and access to library and learning resource materials. MCV/VCU is working to establish a regional AHEC in Southside Virginia and an urban AHEC in the city of Richmond.

### VIRGINIA CENTER ON AGING

The Virginia Center on Aging, established at Virginia Commonwealth University by the Vir-

ginia General Assembly in 1978, has three mandated functions: interdisciplinary study, research, and information sharing. Consequently, it is a statewide resource for aging-related research, education, service, training, and technical assistance. It serves as a focal point for the collection, assessment, and maintenance of data on elders in the Commonwealth; designs and tests innovative demonstration projects in education and service delivery; and assists public and private organizations in meeting the needs of older citizens.

The Virginia Center on Aging and the Department of Gerontology, School of Allied Health Professions, jointly conduct the Virginia Geriatric Education Center and maintain the Information Resources Center, a broad collection of print and audiovisual materials on aging that are available on loan or to rent. Short reports, training manuals, and vertical files may be obtained at cost. The Virginia Center on Aging also administers the Alzheimer's and Related Diseases Research Award Fund to stimulate multidisciplinary research in the Commonwealth on dementias through an annual grant competition. The Center also offers Elderhostel, an international week-long residential learning experience for older adults, conducting over 40 weeks of such programs and drawing annually over 2,000 Elderhostelers to the Commonwealth.

### DIVISION OF CONTINUING STUDIES AND PUBLIC SERVICE

The Division of Continuing Studies and Public Service, a major division of VCU, is responsible for coordinating the university's community outreach and international activities. Programs and services offered by the Division to achieve its mission include:

- Continuing education and conferences
- Community Service Associates Program
- Cooperative education and internship programs
- Distance learning: television and off-campus
- Summer studies
- Retired faculty program

The Center for International Programs works to promote a variety of faculty and student activities in a global context. The mission of the center is to assist the internationalization of programs throughout the University in a collaborative relationship with the schools, college, and other administrative units. The center currently provides programs and services in the following areas:

- International student advising
- Student study abroad and exchanges

- Faculty study abroad and exchanges
- English language program
- University linkages and agreements of cooperation
- International student recruitment and admission
- Visiting scholar services

The Center for Public Service provides coordination and support for public service activities throughout the University. The center is responsive to current and emerging needs of diverse community groups and organizations with which students, faculty, and staff interact. In all its programs, staff of the center seek to develop and strengthen effective linkages between the University and the community. Its programs include the Survey Research Laboratory and Policy Studies and Evaluation.

Further information may be obtained by writing to Virginia Commonwealth University, Division of Continuing Studies and Public Service, 827 West Franklin Street, P.O. Box 842041, Richmond, VA 23284-2041, (804) 367-8421 or FAX 367-8172.

## SUPPORT SERVICES

### Libraries and Their Resources

University Library Services (ULS) administers the major research libraries on both campuses. Collections are housed in James Branch Cabell Library on the Academic Campus, Tompkins-McCaw Library on the MCV Campus, and the Main Hospital Library, Ninth Floor, Room 117. In addition, ULS operates Media Production Services and video teleconference facilities on both campuses.

Both libraries provide an assortment of services, including reference assistance from professional librarians, library orientation tours and bibliographic instruction, and self-service photocopyers.

Customized bibliographies can be produced through the bibliographic search service. Search analysts work with clients to define research topics, determine proper search criteria, and select the most appropriate of the many available databases. While the online catalog serves as the gateway to databases, ULS is aggressively pursuing the acquisition of electronic databases. This is complemented by library holdings, which include a broad array of CD-ROMs covering all disciplines.

The online catalog links the libraries on both campuses and enables patrons to search for library materials and determine their status. Through *interlibrary* loan, students may borrow books from public and academic libraries through-

out the United States. ULS also provides services for individuals with disabilities.

Recognizing their needs for advanced research and greater access to materials, ULS offers graduate students special research privileges, including circulation of bound journals and browsing privileges in the current periodicals area. Collection Management librarians work with faculty and graduate students to purchase books, journals, and other library materials.

James Branch Cabell Library's growing collections support the programs of the Academic Campus and also contain a significant number of health science materials. More than 742,000 volumes and approximately 6,900 journal titles are housed in the five-story building at the heart of the Academic Campus. ULS is designated as a partial depository for U.S. Government documents and as an official U.S. Patent Depository.

The comprehensive collections of Tompkins-McCaw Library support the University's teaching and research needs in the health sciences and include more than 288,000 volumes and over 2,900 journals. Tompkins-McCaw Library is a designated resource library for the southeastern states in the Regional Medical Library System.

Media Production Services, located in Sanger Hall on the MCV Campus, offers medical illustration, graphic art, photography, computer slide imaging, and instructional design services.

Nonprint materials, such as tapes, videocassettes, slides, compact discs and posters, and equipment to view or listen to these materials are housed in the three libraries.

ULS is a member of the Center for Research Libraries, the Richmond Academic Library Cooperative, the Association of Southeastern Research Libraries, the Richmond Area Film/Video Cooperative, and the Southeast Library Network.

### Division of Animal Resources

The Division of Animal Resources maintains centralized services for the procurement and care of all vertebrate animals. A staff of veterinarians and other trained personnel provide day-to-day care and are available to assist faculty, staff, and students. The facilities are accredited by the American Association for Accreditation of Laboratory Animal Care, which certifies that care and treatment meet the most rigid standards, and are also regularly inspected by veterinarians from the U.S. Department of Agriculture.

Housing for small animals is available in quarters conveniently located near departments and at a large central holding area in Sanger Hall. There is also a 90-acre farm for large animals and for

holding animals for long-term experiments or conditioning.

### **Central Biomedical Engineering Facility**

Well-equipped mechanical and electronic shops for the construction and repair of mechanical and electronic instrumentation are located in Sanger Hall.

### **Health Sciences Computing Services**

Health Sciences Computing Services (HSCS) provides computing support for the research and instructional endeavors of its faculty, students, and staff. Its services include consulting help in the use of University resources, teaching short courses, advice on the acquisition of computer systems, and operation of local computer facilities. A variety of other services, including a test-grading service, are provided to support micro-, mini-, and mainframe computing. The unit reports to the Office of the Vice President for Health Sciences.

On the MCV Campus, a VAXcluster (VMS) consisting of a VAX 7610, VAX 6620 and VAX station 4000 provides interactive computing to public and private terminals around the campus. An extensive variety of programming languages and software packages for data analysis and management, statistics, graphics, molecular modeling, and networking is available. The DECnet local area network connects the VAX cluster to some 15 other DEC computers on Campus. A number of Unix-based workstations (IBM RS/6000 AIX, DEC Ultrix, and SUN OS) are accessible on the TCP/IP-based network. Network Switch devices provide access to the centralized, as well as departmentally owned, computing resources.

The VAXcluster is connected to the Internet and BITNET, which allows communication to other institutions throughout the nation and abroad. A high-speed fiber backbone connects all major buildings on campus. In addition, the University Computer Center, administered by the Office of Administrative Services, provides computer utility services on an IBM 3090 mainframe (MVS/XA) system for administrative and academic functions of the University. These services include TSO and CICS on-line systems and batch job processing. The University VCUnet provides access to DEC Ultrix systems on the Academic Campus.

Personal computer facilities with IBM-compatible and Macintosh systems are available at the HSCS facility located on the B-3 level of

Sanger Hall. A variety of software is available for wordprocessing, spreadsheets, database management, statistics, graphics, bibliographic references, and networking. External devices such as optical page scanners, slide-making cameras, digitizers, and laser printers are available. Novell networks connect these systems with departmentally owned LANs.

### **FACILITIES—ACADEMIC**

**Sanger Hall** is located on East Marshall Street between Eleventh and Twelfth Streets and extends along Eleventh Street to Broad Street. Named in honor of Dr. William T. Sanger, third president of MCV, Sanger Hall houses the teaching headquarters for the clinical medical faculty and the basic health science departments and research laboratories.

The **Nursing Education Building**, originally a dormitory for nurses, provides administrative offices and classrooms for the School of Nursing.

**Randolph-Minor Annex** is a former church building which provides teaching facilities for the Departments of Gerontology and Clinical Laboratory Sciences.

The **Egyptian Building**, designed by Thomas Stewart of Philadelphia, was the first building owned by the Medical College of Virginia. Completed in 1845, it is considered one of the purest examples of Egyptian architecture in the United States. Offices for continuing medical education, faculty offices of the Departments of Psychiatry and of Physical Medicine and Rehabilitation of the School of Medicine, seminar rooms, and the Baruch Auditorium (with a seating capacity of about 300) are housed in this building located at the corner of College and East Marshall Streets.

The **Robert Blackwell Smith, Jr., Building**, named for the last president of the Medical College of Virginia, is located at Twelfth and Clay Streets. It provides teaching and research facilities for the School of Pharmacy and the Department of Pharmacology and Toxicology of the School of Medicine.

**McGuire Hall** and **McGuire Annex** are named for Dr. Hunter Holmes McGuire, founder of the University College of Medicine which consolidated with MCV in 1913.

Located on the north side of Clay Street between Eleventh and Twelfth Streets, these adjoining buildings once housed the School of Pharmacy and now provide research facilities primarily for the Biotechnology Institute of the Center for Innovative Technology, and the School of Medicine. The Department of Physical Therapy

of the School of Allied Health Professions is located on the second floor.

The **William H. Grant House**, located at 1008 East Clay Street, was built in 1857 by its namesake, a prominent Richmonder. From 1894 until 1964, the building was used as the Sheltering Arms Free Hospital. Grant House was recently renovated to house the Department of Health Administration of the School of Allied Health Professions and offices of the School of Medicine's Department of Preventive Medicine and Community Health. In addition, the building provides space for units of the university's physical plant department and police.

The **Wood Memorial Building** and the **Lyons Building**, named in honor of Dr. and Mrs. Jud B. Wood and Dr. Harry Lyons, dean of the School of Dentistry from 1951 until 1970, house the School of Dentistry. These adjoining buildings are located on Eleventh and Twelfth Streets, respectively, just north of McGuire Hall.

The **Lewis L. Strauss Research Laboratory** accommodates a number of important research projects of the Department of Pharmacology and Toxicology and the Program in Biomedical Engineering. It is located next to the Tompkins-McCaw Library on North Twelfth Street.

The **Stephen and Samuel Putney Houses** are historic landmarks and have been restored to their original nineteenth-century designs. The Stephen Putney House located at 1012 East Marshall Street provides administrative offices for the vice-president for health sciences and the Medical College of Virginia Foundation. The Samuel Putney House at 1010 East Marshall Street houses the office of the University General Counsel and certain activities of the Department of Gerontology, School of Allied Health Professions.

The **VMI Building**, formerly the Virginia Mechanics Institute, is located at the corner of Tenth and Marshall Streets and houses a variety of activities and programs. Among these are the offices and laboratories of the Department of Occupational Therapy of the School of Allied Health Professions, offices of the University Human Resources Division, and offices of the MCVH Quality Assurance program. The campus mail services office is located on the ground floor of this building.

The **"N" Parking Deck** facility at the corner of Leigh and Tenth Streets, in addition to providing staff and faculty parking space, houses the MCV Campus Bookstore, part of the MCV Hospitals *Day Care Center*, and operations units of University Printing Services and Mail Services.

The four **residence halls** located at Tenth and Leigh Streets provide offices for student life and student services personnel in addition to living quarters for students. They are named **Warner Hall**, **Bear Hall**, **Rudd Hall**, and **McRae Hall**.

**Cabaniss Hall** is a 432-bed dormitory located southwest of the Jonah L. Larrick Student Center.

The **Jonah L. Larrick Student Center** is named for the former director of YMCA activities at MCV. On the first floor are the cafeteria and a smaller dining room for special events. The second floor houses a large lounge and exhibit area with smaller rooms for TV viewing, music listening, piano playing, games and activities, offices, and meetings.

Adjacent to the student center is the **MCV Gymnasium** with extensive facilities for intramurals, recreation, and physical fitness.

**Hunton Hall** houses the offices of Student Financial Aid, the University Counseling Center, a student study area and the Computer-Based Instructional Laboratory of the School of Medicine, a printing facility, and the Campus Room restaurant.

In addition to the major buildings, a number of smaller structures house various departments of the institution.

## Endowment, Resources, Support, and Research

Although VCU is a state-supported institution, it is indebted to many friends for generous gifts and bequests that are vital to the successful performance of its mission in education, service, and research.

While Virginia Commonwealth University is one of the leaders in teaching among the institutions of higher education in the state, it is also an institution which commits a significant portion of its resources to research and scholarly activities. VCU is fully committed to the proposition that a broad-based program of research investigations enhances the teaching mission of the University while, at the same time, it improves the quality of services provided to the community. During the fiscal year ending on June 30, 1993, the University received over \$81 million, of which more than \$66 million was received on the MCV Campus, in sponsored program support from a variety of public and private organizations. The extensive and diverse nature of the University's research programs is directly related to the excellence of the faculty on both campuses.

### A.D. WILLIAMS FUNDS

The estate of A.D. Williams, left in trust, provides an appreciable income each year to the MCV Campus. Funds made available from this trust are administered by a committee appointed by the vice-president for health sciences. The funds are used in support of scholarship and research. A portion of these funds is also used for research grants and development awards to MCV Campus faculty. Use of this portion of the funds is based upon the recommendations of the A. D. Williams Research Advisory Committee.

### MCV FOUNDATION

The Medical College of Virginia Foundation was established as a not-for-profit corporation in 1949 with its express purpose being to aid, strengthen, and extend in every proper and useful manner, the work, service, and objectives of the Medical College of Virginia.

The MCV Foundation Board consists of 25 trustees, seven honorary trustees, and three ex-officio trustees. The bylaws of the foundation specify that the board must consist of at least three alumni of MCV, one member of the VCU Board of Visitors, and one faculty member from the MCV Campus.

The MCV Foundation is tax exempt under §501(c)(3) of the IRS Code, and all lifetime gifts and bequests are tax deductible to the extent allowed by law. The foundation directly receives gifts for the MCV Campus both for current needs as well as for endowment.

From 1990-1994 the foundation provided over \$10 million from endowment income for support of programs in the MCV Campus schools and hospitals.

The foundation offices are located in the Stephen Putney House at 1012 East Marshall Street. All correspondence should be mailed to the Executive Vice President, Medical College of Virginia Foundation, P.O. Box 980234, Richmond, VA 23298-0234.

### ENDOWED CHAIRS AND PROFESSORSHIPS

Endowed professorships have been established in honor of individuals who have played vital roles in the development of the Medical College of Virginia:

**Arthur Graham Glasgow Professorship of Hospital Administration.** This professorship was established in 1957 in honor of Doctor Glasgow, who provided so generously in his ill for MCV, and who had shown such a vital interest in hospitals.

**Stuart McGuire Chair of Surgery.** This professorship was established in 1959 in honor of Dr. Stuart McGuire, who was president of the University College of Medicine when it was consolidated with the Medical College of Virginia in 1913, and who was successively professor of surgery, dean, president, and chairman of the Board of Visitors of the combined institutions. Doctor McGuire died in 1948. His wife, Mrs. Ruth Robertson McGuire, died in 1963. The bulk of their estates was bequeathed to MCV to be used for the Department of Surgery.

**William Branch Porter Professorship of Internal Medicine.** This professorship was established in 1959 in honor of Doctor Porter, who was chairman of the Department of Medicine from 1927 to 1956 when illness forced his retirement. He died October 6, 1960, leaving his entire estate to the MCV Foundation for use of the Department of Medicine.

**Harvey B. and Gladys V. Haag Professorship of Pharmacology.** Established in 1963, this professorship honors Dr. Harvey Bernhardt Haag and his wife, Mrs. Gladys Vaden Haag. Doctor Haag, who died in 1961, joined the college faculty in 1923 and was promoted to professor and chairman of the Department of Pharmacology in 1933. He also served as dean of the School of Medicine from 1947 to 1951. At Mrs. Haag's death in 1962, the bulk of their joint estate came to the MCV Foundation for support of the Department of Pharmacology.

**Norborne F. Muir Chair of Orthodontics.** Established in 1974, this chair honors Dr. Norborne F. Muir, who in his will generously provided a bequest to the MCV Foundation to establish a chair of orthodontics in the School of Dentistry. Doctor Muir, who died in 1974, graduated from the School of Dentistry of the Medical College of Virginia in 1918 and practiced dentistry all of his professional life in Roanoke, Virginia.

**Leroy Smith Professorship in Plastic and Reconstructive Surgery.** Established in honor of Dr. Smith, who in 1947 became the first board-certified plastic surgeon in Richmond. Dr. Smith established the field of plastic and reconstructive surgery at Children's Hospital and the Medical College of Virginia and was for many years its sole practitioner at both institutions.

**Jesse Ball duPont Chair in Pediatrics.** Established in 1985, this endowed chair honors Jesse Ball duPont through a gift to the University from the Alfred I. duPont Living Trust.

**W. Taliaferro Thompson Professorship in Pulmonary Medicine.** Established in 1986



through gifts and pledges to the MCV Foundation by colleagues, friends, and former students in honor of Dr. Thompson, an alumnus of the medical class of 1938. From 1959 to 1973, Dr. Thompson served as the William Branch Porter Chairman of the Department of Medicine.

**Elam Toone Professorship of Internal Medicine.** This professorship was established in 1986 in honor of Dr. Elam C. Toone, who was emeritus professor of internal medicine and an internationally recognized leader in arthritis research and treatment. Doctor Toone, whose teaching career and many contributions to the institution spanned more than 50 years, founded the Arthritis Clinic at the Medical College of Virginia in 1938. The endowment for the Toone professorship was funded with gifts and pledges provided to the MCV Foundation by colleagues, friends, former students, and patients of Doctor Toone.

**E. Claiborne Robins Professorship in Pharmacy.** Established in 1987 by E. Claiborne Robins, Sr., to attract and retain prestigious scholars in research and teaching in the School of Pharmacy.

**Charles M. Caravati Professorship in Gastroenterology.** Established by gifts and pledges to the MCV Foundation by colleagues, friends and former students to honor the work and dedicated service of Dr. Caravati, who brought the study and practice of gastroenterology to the Medical College of Virginia. Dr. Caravati was one of the founding trustees of the MCV Foundation in 1949 and served as assistant dean of continuing education in the School of Medicine from 1966 until his retirement in 1973.

**Edward S. and Elizabeth W. Hirschler Professorship in Neurosurgery.** Established in 1988 to help the efforts in learning more about mechanisms and treatment of spinal cord disease.

**Walter E. Lawrence, Jr. Professorship in Oncology.** Established in 1988 through a gift to the MCV Foundation from the Massey Foundation in honor of the contributions of Dr. Lawrence, first director of the Massey Cancer Center.

**Charles W. Thomas Professorship in Rheumatology.** Established in 1988 by Mrs. Evelyn F. Thomas in honor of her husband. Dr. Thomas, a 1903 graduate of the School of Medicine, and his wife were the most generous benefactors in the University's history. Before his death in 1964, Dr. Thomas suffered from debilitating arthritis. The Thomas Professorship supports research for causes and treatment of rheumatoid arthritis.

**Taliaferro/Scott Professorship in Internal Medicine.** Established in 1989 by Mrs. Thomas

B. Scott, Jr. in memory of her husband, Thomas Branch Scott, Jr., her grandfather, Horace Dade Taliaferro, M.D., her sister, Lucy Nelson Taliaferro, and in honor of herself, Carrie Triplett Taliaferro Scott. The Taliaferro/Scott Professorship is appointed at the discretion of the Chairman of Internal Medicine to attract prestigious scholars in research, teaching, and patient care in the field of internal medicine.

**Rachel Brown Banks Professorship of Psychiatry.** Established in 1990 to enhance research in the field of affective disorders in the Department of Psychiatry.

## Student Life and Services

### DIVISION OF STUDENT AFFAIRS

The University offers a wide variety of services to its students with responsibility for the majority of these services falling under the Division of Student Affairs.

The mission of the Division of Student Affairs is to help VCU students gain the most from their educational experiences, through direct services, attention to the campus environment, and effective communication and collaboration.

### HOUSING FACILITIES

Residence Halls with a capacity for 514 students are located in the northwest corner of the MCV Campus.

Rooms are furnished with beds, mattresses, study desks, chairs, and either chests-of-drawers or bureaus. Janitorial service is provided. Residence hall staff are available to assist.

Students and members of the housestaff may obtain assistance from the Housing Office in locating accommodations off campus.

Housing information and applications will be sent to all students as they are accepted for admission to the university. Requests for additional housing information should be made to the Director of University Housing, Virginia Commonwealth University, P.O. Box 842517, 711 West Main Street, Apt. 103, Richmond, VA 23284-2517.

Dormitory room assignments are made for the period of an academic year, which normally is two semesters.

When students are required to remain beyond the usual academic calendar, rentals will be charged on a prorated monthly basis. Reservations are made in advance for the full period or for such part of the period as may be approved specifically by the Housing Office.

A current rate schedule is available upon request from the Housing Office. Rent is payable in advance by the semester, and refunds will be made only in accordance with the University policy as stated in the University's bulletins and housing contract.

## STUDENT CENTER

The Jonah L. Larrick Student Center is a unique circular building consisting of two levels:

**Lower Level—Dining Facilities:** A cafeteria provides food on a contractual basis for students living in the dormitories and for off-campus students who elect to be on the meal plan. It is used on a limited basis by faculty and staff when it does not conflict with the student schedule.

There is a small private dining room which may be reserved for private luncheons and dinner meetings. Arrangements to use this room, as well as for catering for social functions, are made through the manager of food services.

**Upper Level—Activities Area:** A variety of activities and social opportunities are offered to students through the Larrick Student Center. A large lounge in the center is surrounded by smaller rooms. The lounge area accommodates up to 375 people for dances, social mixers, lectures, etc. The walls are lighted and equipped for hanging art exhibits. The smaller rooms include offices of the student center manager, the MCV Campus Student Government and Honor Council, *The X-Ray* (MCV Campus yearbook), and two conference rooms which accommodate up to 50 people.

There are rooms for pool and table tennis, as well as cards, chess, piano playing, and listening to recordings.

The Student Center Board, comprised of students, faculty, and administration, determines policies, procedures, and programs for the Larrick Student Center and helps to identify student interests and needs.

Reservations for use of the activities area should be made through the office of the Larrick Student Center manager.

## STUDENT ACADEMIC SUPPORT SERVICES AND SERVICES FOR STUDENTS WITH DISABILITIES

The MCV Campus Office of Student Academic Support Services (SASS/SSD) provides academic counseling and skills development services for students enrolled in all programs on the MCV Campus. Its objective is to help students find ways to deal with their academic concerns and to help them become more efficient and effective learners. These services include learn-

ing/study skills, test-taking, writing, clinical presentation and time management skills.

This office also coordinates Services for Students with Disabilities in compliance with Section 504 of the Rehabilitation Act of 1973 and the American Disabilities Act of 1990. Students with disabilities are urged to identify themselves early to the Coordinator so that appropriate and reasonable accommodations may be provided. The Coordinator provides support, counsel and skill development for students and acts as an advocate and liaison between students and faculty. Students who suspect they may have a disability can consult with the Coordinator about referral for evaluation. All information presented to the Coordinator is strictly confidential.

The Office of Student Academic Support Services and Services for Students with Disabilities is located in Suite 301 of the VMI Building at 1000 East Marshall Street on the MCV Campus. For further information, please contact SASS/SSD at Virginia Commonwealth University, P.O. Box 980124, Richmond, VA 23298-0124, (804) 828-9782, VTDD 828-4608.

## UNIVERSITY STUDENT HEALTH SERVICES

BETTY ANNE JOHNSON, M.D., Ph.D.

Director

RALPH CLARK, M.D.

Assistant Medical Director

LYNNE CLEMO, M.D.

Assistant Medical Director

DAVID W. NELSON, M.D.

Assistant Medical Director

BETTY R. REPERT, PA-C

Assistant Director for Health Education

The University Student Health Services (USHS) offer quality primary health care for the treatment of acute and chronic illness. In addition to diagnosis and treatment, the service emphasizes prevention of illness through screening, counseling, and health education. Full-time students are required to participate and pay the student health fee. Part-time students may elect to participate in the service but must pay the full student health fee.

The service is staffed by physicians, physician assistants, nurse practitioners, registered nurses, pharmacists, and health educators.

Services offered by the Student Health Services include general medical, allergy, gynecology clinics, pharmacy and laboratory services, after-hours emergency care, and health education and public health programs.

All educational activities sponsored by USHS are available to students, including educational literature, video cassettes, weight-reduction classes, and health-related programs on topics of interest to students.

Accidental injury and hospitalization are not covered by USHS, and students are urged to take advantage of the University-sponsored health plan. Information on this insurance program, which provides benefits to students at group rates, may be requested from USHS.

Virginia law requires all full-time students to submit an immunization record prior to enrollment for the first time at VCU. The immunization record is included in the health history form mailed to students from University Enrollment Services and should be sent to the Immunization Coordinator, University Student Health Services, Virginia Commonwealth University, 711 West Main Street, Richmond, VA 23284-2022. For further information see the description of immunization requirements in the section of this bulletin entitled "Admission Requirements."

The USHS office on the Academic Campus is located in Suite 159, Gladding Residence Center, 711 West Main Street. The USHS office on the MCV Campus is located on the second floor of the A.D. Williams Clinic at 1201 East Marshall Street. For information call (804) 367-1212 (Academic Campus) or (804) 786-9212 (MCV Campus).

## BOOKSTORE

The MCV Campus Bookstore provides textbooks and reference books for health science professionals. The bookstore also offers computer hardware and an extensive line of computer software to the students, faculty, and staff of the University. Other items available at the bookstore include medical equipment and supplies, office supplies, greeting cards, insignia clothing and gifts, magazines, and snacks. Services offered include photo finishing, name tag embossing, lab coat embroidery and instrument repair. A special order service is available for any medical book in print.

**Location/Phone/Fax:** Corner of 10th and Leigh Streets in the "N" Parking Deck, 601 N. 10th Street, 828-0336, Fax 828-8876.

**Hours:** Monday-Friday, 8:00 am-5:30 pm.

**Payment:** The bookstore accepts cash, in-state checks, VISA and MasterCard. Out-of-state checks are accepted during the first two weeks of the fall semester.

**Refunds and Exchanges:** A valid cash register receipt is required for a refund or exchange. Merchandise must be in absolutely new condi-

tion. Textbooks may be returned only through the second week of regular classes.

## UNIVERSITY MAIL SERVICES

The United States Postal Service (USPS) provides self-service postal vending machines in the lobby of the VMI Mail Center at 1000 East Marshall Street on the MCV Campus. A full service USPS Civic Center station located in the basement of the Federal Building, 8th and East Marshall Street is available for MCV Campus students.

All student living in residential housing have residence hall mailboxes. The nine-digit zip code is important and should be used on all mail. Mail for residence hall occupants should be addressed as described below:

### **Cabaniss Hall:**

[Name]

[Room no.] Cabaniss Hall  
Richmond, VA 23298-8000

### **Bear, McRae, Rudd, or Warner Hall:**

[Name]

[Room no.] \_\_\_\_\_ Hall  
Richmond, VA 23298-7999

For additional information call University Mail Services at (804) 828-2557 or (804) 828-3868.

## THE STUDENT BODY ORGANIZATION

The student body organization on the MCV Campus was formed to promote college activities; to promote a concern among students for each other and a greater identification with the University; to express a unified voice in matters which affect the best interests of the student body; and to foster a constructive relationship between the University and the community and state.

The student body on the MCV Campus operates through the Student Government Association (SGA). Representatives are elected from each class of the health science schools on the basis of one representative per 40 students.

SGA meetings are held monthly from September through April, except December, and are open to all MCV Campus students. In 1991-92, the SGA had an operating budget of almost \$70,000 through which the yearbook and numerous social activities were funded. The association sponsors blood drives, University Guest Day, and other community projects. The SGA provides a forum for discussion of student ideas and suggestions and serves as a means for initiating innovative changes in campus life. In recent

years, the SGA has addressed some issues with officials at the state and local levels as well as top University administrators.

## HONOR SOCIETIES

Students who excel in scholarship and leadership may be eligible for membership in honor societies related to their fields of study. In addition, students who meet established criteria may be elected to one or more of the following societies:

**Phi Kappa Phi** is a national honor society which recognizes and encourages superior scholarship. It accepts members from applied and professional fields of study, as well as from letters, arts, sciences, and humanities. The VCU chapter was installed in 1977.

**Sigma Xi Society** is a national honor society founded for the encouragement of research in science and recognizes individuals for research achievement or promise.

**Alpha Sigma Chi** is an MCV Campus organization which was founded in 1938. It recognizes those individuals who excel in leadership and service to colleagues, school, and the University.

**Sigma Zeta** is an honorary science fraternity which encourages and fosters knowledge of the sciences and recognizes attainment of high scholarship in the sciences. Gamma Chapter was installed at MCV in 1926.

## VCU HONOR CODE

The student body organization, believing that self-government in college is fitting preparation for self-government in life following graduation, conducts its affairs by means of an honor system under which every student is assumed to be trustworthy and unwilling to do anything dishonest or dishonorable. The MCV Campus section of the honor system was inaugurated by students during the academic year 1895-1896; and while procedures have been modified, the essential spirit of the system remains unchanged.

Any student failing to live up to the principles of the honor system by lying, cheating, or stealing is subject to punishment by the Honor Council which is elected by the student body. All students must support the VCU Honor Code and report infringements thereon to their Honor Council representative. The following pledge applies to all examinations unless otherwise stated by the instructor: "On my honor, I have neither given nor received aid on this examination, quiz, or test." Each student, as a condition of matriculation at the MCV Campus of Virginia Commonwealth University, agrees to abide by and uphold the Honor Code. A detailed description of the

Honor Council's rules and procedures is available upon request to the Office of Student Government or from the Office of the Dean of Student Affairs, 104 Bear Hall.

Students who are not enrolled in a formal program in one of the schools on the MCV Campus, but take courses on the MCV Campus, are expected to abide by the MCV Campus section of the Honor Code.

## VCU RULES AND PROCEDURES

Each member of the VCU community has certain responsibilities, rights, and privileges. These are stated in some detail in the *Virginia Commonwealth University Rules and Procedures* booklet, and all students are responsible for being familiar with provisions of this document. The rules and procedures are available at the Office of the Dean of Student Affairs. This document also provides for the process whereby disciplinary action, including separation from VCU, may be taken against a member of the university community as a result of behavior which is in violation of the prohibited conduct as stated in the Rules and Procedures.

In addition to those standards of conduct described in the *Virginia Commonwealth University Rules and Procedures* booklet and the VCU Honor Code, a student enrolled at the University may be dismissed from the school in which he or she is enrolled for failure to meet prescribed academic program requirements.

VCU seeks to foster insight, imagination, creativity, resourcefulness, diligence, honesty, and responsibility, as well as the education of the men and women enrolled in its programs. Such an enterprise can take place only where the highest standards of academic integrity exist.

Academic dishonesty is the giving, taking, or presenting of information or material by students with the intent of unethically or fraudulently aiding themselves or others on any work that is to be considered in the determination of a grade or the completion of academic requirements. Students in doubt regarding any matter related to the standards of academic integrity in a given course or on a given assignment should consult with the faculty member responsible for the course before presenting the work.

## STUDENT IDENTIFICATION CARDS

Students should carry their university identification cards with them at all times and should be ready to show them to any authorized university official who might request their identification.

Students may obtain or validate their I.D. cards during registration. The cards are required for numerous university functions, including borrowing books from the library and use of the university shuttle system. Any student who loses an I.D. card should apply to University Enrollment Services/Records and Registration for a replacement. There is a charge for replacement.

### MCV CAMPUS GYMNASIUM AND INTRAMURAL ATHLETICS

The two MCV Campus gymnasiums offer a full recreational program for students, house-staff, faculty, and employee gym members. Membership for all except MCV Campus students is on a fee basis. Membership information may be obtained through the director's office by calling (804) 786-0437. The gym facilities include four basketball courts, three volleyball courts, two indoor tennis courts, four handball-racquet ball courts, and two squash courts. In addition, there are two weight rooms, an exercise room, a multipurpose room, a training room, and locker-shower rooms for men and women students and men and women faculty. Equipment may be checked out for basketball, football, volleyball, and racquetball. Special equipment for boxing, gymnastics, karate, exercise, picnics, and camping is also available.

MCV Campus students and faculty may use the University swimming pool located in the Franklin Street Gymnasium on the Academic Campus. ID cards are required.

An extensive intramural program is offered to men and women students and housestaff. Team sports include flag football, basketball, coed two-person basketball, coed and men and women's volleyball, and slow-pitch softball. Individual tournaments are held in tennis, racquetball, squash, table tennis, billiards, badminton, weight lifting, wrestling, one-on-one basketball, and basketball free-throw. Additional information may be obtained by calling the director's office.

Club sports include rugby, soccer, tennis, karate, and fencing. Karate, self-defense classes, and aerobic exercise classes are held in the MCV Campus gymnasium. Various elective classes are offered for credit to men and women through the Department of Physical Education on the Academic Campus.

### CULTURAL OPPORTUNITIES IN RICHMOND

The student affairs offices assist in planning extracurricular activities for the intellectual, cultural, religious, and recreational life of students.

The resources of the Virginia State Library as well as those of the Richmond Public Library, located a few blocks from both campuses, are available.

Near the MCV Campus are the Valentine Museum, with its excellent historical displays of early Richmond, and the Museum and White House of the Confederacy, with memorabilia of the Civil War.

Students have the opportunity to purchase season tickets to programs at the Virginia Museum of Fine Arts. These include chamber music, theatre, outstanding films of the past, and ballet, as well as fine art exhibits.

The Richmond Symphony and the Richmond Sinfonia are the recipients of enthusiastic support of music critics and the public alike.

Various dinner theaters in the area, as well as the Performing Arts Center on the University's Academic Campus, provide delightful evening entertainment.

The 12,176-seat Richmond Coliseum, which serves as the home court of the University's basketball team, is located west of the MCV Campus. The coliseum programs include sports events, concerts, spectacles, circuses, and various other events.

## Admission Regulations

The Medical College of Virginia of Virginia Commonwealth University does not limit applications to residents of Virginia; however, priority is given to those who are legal residents. Candidates are considered without regard to race, creed, gender, disability, age, or national origin. For detailed information regarding admission requirements and procedures, refer to the appropriate school sections of this bulletin.

### IMMUNIZATION REQUIREMENTS

In accordance with state law, Virginia Commonwealth University requires that all full-time students have a completed and validated immunization record on file at *University Student Health Services*.

Immunity to tetanus, diphtheria, mumps, rubella (German measles), and rubeola (measles) must be documented as specified on the forms supplied by the UES/Admissions office. In lieu of the measles and rubella vaccines, a blood test demonstrating immunity to those diseases is also acceptable.

Students may obtain their immunization histories from the schools they attended, military records, health department and clinic records,

and their private physicians. If immunization records cannot be obtained, the student must receive the required immunizations. Students previously admitted to university programs who may have submitted an immunization record to University Student Health Services within the past five years must so notify the USHS office.

If immunization certification forms are not completed according to the above requirements and copies of all supporting documents received, computer holds will be placed on students' academic records and they will not be permitted to register for subsequent semesters at the University.

Immunization certification forms should be mailed to the Immunization Coordinator, University Student Health Services, Virginia Commonwealth University, 711 West Main Street, P.O. Box 842022, Richmond, VA 23284-2022.

For further information, contact the Immunization Coordinator at (804) 367-1212 or either University Student Health Services office at (804) 786-9212 (MCV Campus) or (804) 367-1212 (Academic Campus).

### MINORITY APPLICANTS

Applicants from minorities underrepresented in the health sciences are encouraged to contact the Office of the Health Careers Opportunity Program, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980549, Richmond, VA 23298-0549.

### INTERNATIONAL STUDENTS

The University encourages qualified international students, both nonimmigrant and immigrant, to seek admission to VCU. Complete information and application materials for international students may be obtained on written request from Center for International Programs/International Admissions, Virginia Commonwealth University, P.O. Box 843043, Richmond, VA, USA 23284-3043.

**Nonimmigrants** (Students with temporary U.S. visas)

Due to the time constraints involved in processing applications from international students and in obtaining visas, prospective students should apply well in advance of the international application deadlines. The deadlines are April 1 for fall semester, October 1 for spring semester, and February 1 for summer sessions. Students must meet specific program deadlines. The graduate dean must authorize any exception to application deadlines. All required admission documents must be submitted no later than eight weeks prior to

registration if appropriate immigration documents are to be issued. Applicants who are unable to meet this credential deadline will need to defer their intended term of entry.

Both U.S. government regulations and VCU admission policies require nonimmigrant applicants to demonstrate:

1. satisfactory academic achievement,
2. adequate English language proficiency, and
3. ability to finance all educational and living expenses.

Refer to university and program admission requirements in this bulletin for other information requested of all applicants.

Applicants must have earned a bachelor's degree from an accredited institution in the U.S. or an equivalent degree from a recognized foreign institution. Official academic records must be submitted.

International applicants must provide evidence of proficiency in the English language prior to admission and/or full-time enrollment in the University. An applicant may satisfy University English proficiency requirements by obtaining a satisfactory score on the Test of English as a Foreign Language (TOEFL). The University minimum TOEFL score requirement is 550; however, most graduate programs prefer a minimum TOEFL score of 600.

As VCU generally does not provide financial support for graduate international students, applicants needing a student (F-1) visa or a visiting scholar (J-1) visa also must present documented evidence of available financial support to cover annual living and educational expenses while studying at VCU.

U.S. Immigration and Naturalization Service regulations usually do not allow nonimmigrant students to study at VCU as special (nondegree seeking) students. Proof of current visa type must be submitted with the application unless the applicant is requesting an F-1 or J-1 visa. F-1 students and J-1 visiting scholars admitted to VCU must submit copies of all immigration documents to the international student advisor prior to enrolling in classes.

**Immigrants** (permanent residents, resident aliens, and asylum applicants)

Because immigrant applicants usually are in the U.S. at the time an application is submitted, these students are required to meet the same application deadlines as U.S. citizens.

If educated in the U.S., immigrant applicants will be considered for admission under the same

academic policies as those applied to U.S. citizens. If educated outside the U.S., the same academic records are required as those for nonimmigrant students.

VCU requires detailed information concerning U.S. immigration status. Proof of permanent residency must be submitted with the admission application.

Non-native English speaking students must demonstrate a satisfactory level of English language competence. Evidence of English proficiency will depend upon several factors such as length of stay in this country, amount of formal U.S. education, and Test of English as a Foreign Language (TOEFL) and other standardized test scores. The School of Graduate Studies reserves the right to require additional testing and English remediation prior to enrollment.

## Tuition, Fees, and Expenses

Current tuition and fees charges are published in the VCU Schedules of Tuition, Fees, and Other Expenses. These publications are available each June, upon final determination of charges by the Virginia Commonwealth University Board of Visitors, and describe tuition and fees for the following academic year. Copies may be obtained by writing University Enrollment Services/Admissions, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980632, Richmond, VA 23298-0632, or the Student Accounting Department, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980010, Richmond, VA 23298-0010.

It is expected that students shall pay all applicable fees as described in the *VCU Schedules of Tuition, Fees, and Other Expenses* when due. Students failing to pay their applicable fees when due will be subject to a late payment fee.

The University reserves the right to revise or alter all charges, regulations pertaining to student tuition and fees, and collection procedures whenever such revisions or alterations are deemed necessary. Tuition and fees are not returnable except under the most unusual circumstances and then only on the recommendation of the dean concerned. See Refunds section of this bulletin.

It should be stressed that a student will incur not only those expenses for which the institution bills, but will, in addition, pay for clothing, books, supplies, travel, and many out-of-pocket expenses. Accordingly, each student should make allowances for such expenses in figuring the total cost of each year at the University. Information on

costs of books, uniforms, instruments, laboratory supplies, off-campus practica, and fieldwork, etc., may be obtained by contacting the appropriate dean's office.

The Student Accounting Department issues bills to preregistered students for the following charges: tuition, Student Government Association Fee, University Fee, dental kit, room rent, board fee, Student Health Fee and other course-related fees. All charges are due approximately one week before the official start of the fall and spring semesters. All other students must pay full charges at registration. Summer charges are also due at registration.

If charges are being covered by financial aid from outside the University, written verification must be provided before credit can be taken. The organization making the award must provide the University in writing the amount, method of payment, and approximate date payment will be received. The award must be unconditionally guaranteed to the University. Students may deduct awards from the amount due on the invoice providing the above criteria are met. Should the awarding organization default for any reason, the student is financially responsible for the payment.

No degree will be conferred upon any candidate prior to the payment of all tuition, fees, and other indebtedness to the University.

## APPLICATION FEE AND DEPOSITS

**Application Fee:** Except for the Schools of Medicine and Dentistry, each student applying for admission or readmission to the health sciences programs shall pay a \$20 nonrefundable application fee. The nonrefundable application fee is \$50 for the School of Medicine and \$35 for the School of Dentistry. This fee shall accompany the application form sent to the admissions office.

**Tuition Deposit:** Upon notification of appointment to the entering class, the applicant may be required to pay a tuition deposit for the first year, depending on the school. This deposit is not refunded but is applicable to *first semester* tuition. The deposit is refunded, however, in the case of accepted candidates to the Schools of Medicine and Dentistry who withdraw prior to the dates stipulated by those schools. Authorization to matriculate, received upon payment of a tuition deposit, constitutes an agreement for the reservation of a place in the class entering for the session cited.

**Residence Hall Rent Prepayment:** A rent prepayment is required of each student completing an agreement for residence hall accommoda-

tions. This amount will be credited to the amount due for room rent or the fall semester.

Students living in the residence halls are responsible for damages to the residence halls and will be billed separately for damages.

### **TUITION DETERMINATION AND STUDENT CLASSIFICATION**

Tuition is determined both by the student's domiciliary classification and by the number of credit hours for which the student is registered. Students are reminded that the University reserves the right to revise or alter all tuition and fees, regulations pertaining to tuition and fees, and tuition and fees collection procedures whenever such revisions or alterations are deemed necessary.

**Domiciliary Classification for In-State Tuition Benefits:** Section 23-7 of the Code of Virginia which defines Virginia resident (domiciliary) for tuition purposes states that

"B. . . , no person in attendance at a State institution of higher education shall be entitled to reduced tuition charges unless such person is and has been domiciled in Virginia for a period of at least one year immediately prior to the commencement of the term, semester or quarter for which any such reduced tuition charge is sought.

"C. A person who enrolls in any such institution while not domiciled in Virginia does not become entitled to reduced tuition charges by mere presence or residence in Virginia. In order to become so entitled, any such person must establish that, one year before the date of alleged entitlement, he or she was at least eighteen years of age or, if under the age of eighteen, was an emancipated minor, and had abandoned his or her old domicile and was present in Virginia with the unqualified intention of remaining in Virginia for the period immediately after leaving such institution and indefinitely thereafter. . . .

"F. Entitlement to reduced tuition charges must be established by convincing evidence and the burden of establishing entitlement shall be on the person claiming such entitlement."

All non-Virginia resident applicants to the University (undergraduate, graduate, professional, special nondegree) who desire in-state tuition rates as Virginia residents must complete the Application for Virginia In-State Tuition Rates. The residency determination of the applicant will be conveyed at the time of admission.

New students who have initially been classified as non-Virginians for tuition purposes may request a review of the initial residency deter-

mination by contacting University Enrollment Services/Residency. This office may request that the applicant complete a Student Supplemental Application for Virginia In-State Tuition Rates and submit supporting documents for additional clarification. Continuing students desiring a change of their residency status must submit a completed Student Supplemental Application for Virginia In-State Tuition Rates with supporting documentation. Requests and applications for a second review must be submitted to the UES/Residency office by the **last** day of add/drop week for each semester. It is strongly recommended that applications be submitted by

December 1 ..... spring semester

August 1 ..... fall semester

May 1 ..... summer sessions

Students approved for a change to in-state status for tuition purposes will be notified by mail with copies of their approval letters going to UES/Financial Aid and the Office of Student Accounting. Students denied in-state tuition benefits will also be notified by mail. The denial letter will inform the student of procedures for appeal of the decision.

**Special Students:** A student who has been given special permission by the dean of certain schools to enroll as a special student shall pay the appropriate part-time student tuition and fees.

**Summer Students:** Students enrolled in certain health science programs in which full-time study extends into the summer session will be assessed additional charges for the summer program, fieldwork, or clinical affiliations as may be appropriate. All other students, graduate and undergraduate, registering for courses during the summer will pay the regular summer session charges.

**Graduate Study Tuition and Fees:** Regularly enrolled candidates for the M.S. or Ph.D. degree in residence on a full-time basis on the MCV Campus will be charged full tuition and fees. Graduate students must register for a minimum of one semester hour during each semester that they continue as candidates for a degree. Graduate students completing a dissertation must be registered for research credit reflecting effort involved and resources consumed. The time limit for completion of requirements is five years for the M.S. degree and seven years for the Ph.D. degree.



## REQUIRED FEES

**University Fee:** The University Fee is used by the University to support student facilities, campus development, intercollegiate athletics, and other programs. These funds are allocated annually. Full-time students pay a flat rate per semester. Part-time students pay this fee on a per-credit-hour basis.

**Student Health Fee:** All full-time students are required to participate in the University Student Health Service and pay the Student Health Fee. Part-time students may participate on an elective basis but must pay the full student health fee. Among services provided by the University Student Health Services are unlimited office visits for acute and chronic ailments, after-hours emergency room referrals, laboratory tests, and prescription medication for acute illness.

**Student Government Association Fee:** This fee supports social, cultural, and other activities for students on the MCV Campus. It is determined and assessed by the MCV Campus Student Government Association. Full-time students pay a flat-rate fee. Part-time students are not charged this fee.

## NON-RECURRING CHARGES

Application .....	\$20 <sup>1</sup>
Conditional Examination Fees .....	\$ 5 per examination
Identification Card Replacement .....	\$ 5 each
Late Registration Fee .....	\$50 each
Tuition deposits required—Apply to first semester tuition.	

## ROOM AND BOARD CHARGES

When a student receives notification of acceptance to an academic program, a room reservation card will be enclosed. If residence hall space is required, the student fills out the card and returns it with a room rental prepayment. The student will be notified of a contract for placement in a residence hall or of being placed on a waiting list for residence hall space.

The room rent prepayment will be credited toward the total amount due for room rent. New students who returned the signed contract for residence hall space will have until June 30 (for the fall semester) or December 15 (for students entering for the spring semester only) to cancel their contract in writing either to the MCV Campus Housing Office, 107 Bear Hall, P.O. Box 980265, Richmond, VA 23298-0265, or to the central University Housing Office, 711 West Main

Street, No. 103, P.O. Box 842517, Richmond, VA 23284-2517, and receive a refund. When a student signs a housing contract after June 30 or December 15 and then cancels, the prepayment is forfeited.

## Room Rent

Room rent is payable at the time tuition and other fees are due. Contracts for space in the residence halls are for the entire academic year of nine months, except in cases involving contracts initiated during the spring or summer terms or for students who will graduate at the end of the fall semester. Students will not be released from their contracts between semesters. Only one semester's room rent is due prior to each semester.

Students should refer to the *VCU Schedules of Tuition, Fees, and Other Expenses* for exact room and board charges. In addition, students are responsible for damages to student rooms, furnishings, and common living areas.

## Board Plan

Undergraduate students who live in university residence halls are required to participate in the board plan; there are only two exceptions to this rule: fifth-year pharmacy students and students who live in self-sufficient apartment units. Students who live off campus in non-university housing may subscribe to the board plan on any basis. Students may choose any one of five board plans ranging from 10 to 20 meals per week. Students should refer to the *VCU Schedules of Tuition, Fees, and Other Expenses* for exact board plan charges.

Contracts for board (except in cases involving contracts initiated during the spring and summer terms) are for a two-semester period. Exceptions may be made for students who complete their course of study at the end of the first semester. Only one semester of board charges is due prior to each semester. (Students living in non-university housing also may pay by the semester.)

Contractual agreement is implied when a student accepts university room and/or board arrangements. If a resident voluntarily withdraws from the university residence halls without clearance from the director of housing, but remains enrolled at the University, he or she will be responsible for full room and board fees for the remainder of the contract period. Subletting is not permitted.

## INSURANCE

The University is not responsible for accidents occurring to students in connection with class,

<sup>1</sup>Application fee for School of Medicine (M.D. program)—\$50  
School of Dentistry—\$35.

laboratory, shop, fieldwork, athletics, student activities, travel, or other activities.

The University offers to its students an approved insurance plan providing substantial benefits at group rates. The insurance extends for a 12-month period beginning September 1, or from the beginning of the second semester to the next September 1, and includes coverage for accidents, hospitalization, medical, surgical, and other benefits for illnesses. Married students may enroll spouses and children. The University strongly recommends but does not require that all students enroll in student group insurance. Additional information may be obtained by contacting either University Student Health Services Office at (804) 786-9212 (MCV Campus) or (804) 367-1212 (Academic Campus).

## REFUNDS

Students shall be entitled to refunds according to the policies outlined below. See also Financial Aid Refund policy under "Financial Aid."

**Requests for Refund.** Requests for refunds shall be made in writing to the VCU Student Accounting Department, located in the basement of the Lyons Building, 520 North 12th Street, P.O. Box 980010, Richmond, VA 23298-0010, and will be considered on the basis of the policy statement governing the refund of tuition, room, and board. The following policy governs the refund of tuition, room, board, and applicable fees:

1. Tuition and fees will be refunded at prorated percentage rates as follows to students who withdraw from courses prior to the fourth week of the fall or spring semesters:
  - 100% refund of all tuition and fees to students who drop or withdraw from courses through the first week of classes each fall or spring semester.
  - 80% refund of tuition and the University Fee to students who withdraw from courses through the second week of classes each fall or spring semester.
  - 60% refund of tuition and the University Fee to students who withdraw from courses through the third week of classes each fall or spring semester.
  - 40% refund of tuition and the University Fee to students who withdraw from courses through the fourth week of classes each fall or spring semester.

Students who withdraw after the fourth week of the fall or spring semester are not entitled to receive a refund of tuition and fees. NO

AMOUNT WILL BE REFUNDED FOR WITHDRAWAL AFTER THE FOURTH FRIDAY AFTER THE FIRST DAY OF CLASSES FOR THE PROGRAM IN WHICH THE STUDENT IS ENROLLED.

2. A full refund of board plan fees will be made if withdrawal from the board plan is made prior to the first official board plan day. However, students withdrawing from the University will be granted a refund based on a weekly proration throughout the term less an administrative charge.
3. Students suspended from residence halls for disciplinary reasons are not entitled to a refund of room fees and will be responsible for the entire contract period of nine months. Students will not be entitled to a refund of room fees if they voluntarily withdraw from the University residence halls but remain registered for any course(s) at the University. Under no circumstances can students be considered for a refund unless they have completed the official withdrawal procedures.

The actual date of withdrawal will be certified by University Enrollment Services. Refunds, when appropriate, will be computed based on that certified date. *Refunds will not be made to students who do not attend classes and have not completed the required withdrawal procedure.* Refund processing can take from three to four weeks. Exceptions to this refund policy are made only in rare instances. Written application for an exception must be filed in the Student Accounting Department to the Refund Appeals Committee. Students will be notified in writing of the University's action.

Many of the University's degree programs, especially graduate and professional programs, require clerkships or practicums as part of the curricula. Some of these activities may be provided in off-campus facilities requiring students to travel and reside some distance from Richmond. No refund of payments for tuition, fees, or other purposes may be expected by students if some form of credit toward a degree is granted for time spent in this phase of their program.

Fees are considered a normal part of the tuition package regardless of whether the student will or will not be on campus. Appeals to waive fees may be submitted by program directors, with the concurrence of deans, only for students who are assigned internships, clerkships, or practicums which run for at least two consecutive semesters. Partial waivers will not be considered and should not be requested. Crucial to a request for a waiver

will be a demonstration that the student is located too far from campus to utilize facilities or events. A rule-of-thumb would be an internship assignment located more than 100 miles from the main campus.

## STATEMENT OF STUDENT FINANCIAL RESPONSIBILITY

A student who fails to meet payments when due will be assessed a late payment fee, will be denied registration for future classes until he/she has paid all amounts owed to the University, and may be withdrawn from the University. Withdrawals and reinstatements are the responsibility of University Enrollment Services/Records and Registration. Students withdrawn under this policy will not be relieved of their financial responsibility to the University.

Student accounts with balances owed the University will be referred to the Collection Unit. Pursuant to Sec. 2.1-732 et seq. of the *Code of Virginia*, and in accordance with rules and regulations promulgated by the State Comptroller and Attorney General of the Commonwealth of Virginia, Virginia Commonwealth University will charge interest, costs and fees on all accounts past due.

Students with balances owed the University will not be issued degrees, transcripts or grades, or grade reports until all charges are paid in full.

The University is participating in the Virginia Set-Off Debt Collection Act of 1981. Under the provisions of this act, a Virginia individual income tax refund will be subject to the University's claim for unpaid balances of tuition and fees.

## Dishonored Checks

A charge of \$20 will be levied for all dishonored checks.

## LOAN REPAYMENT

Recipients of Perkins/National Direct Student Loans, Health Professions Student Loans (Medicine, Dentistry, Pharmacy, Nursing Student Loans), or other university loans are required to attend an "exit interview" with a representative of the Office of Loan Management (327 West Main Street, P.O. Box 842506, Richmond, VA 23284-2506) before withdrawal or graduation from the University. Interviews may be scheduled on an individual basis, or students may be mailed appropriate forms which must be completed and returned to the Office of Loan Management. Students who are on off-campus as-

signment and must be absent during the interview process are asked to call the above office, (804) 828-4538, for an appointment. Students are encouraged to call this office if they have questions concerning their rights and responsibilities under any of the loan programs.

## Financial Aid

The role of University Enrollment Services/Financial Aid is to assist students in identifying and pursuing financial resources so they can achieve their educational goals. There are four Financial Aid Counseling and Information Services Centers. MCV Campus students are served by three centers located on this campus.

**MCV Campus.** Hunton Hall, 2nd Floor, 323 North Twelfth Street, Post Office Box 980244, Richmond, VA 23298-0244.

**School of Medicine.** 1-005 Sanger Hall, 1101 East Marshall Street, Post Office Box 980565, Richmond, VA 23298-0565.

**School of Dentistry.** 309 Lyons Building, 520 North Twelfth Street, Post Office Box 980566, Richmond, VA 23298-0566.

## APPLYING FOR FINANCIAL AID

To be eligible for most federal, state, and institutional aid programs, there are several general requirements. Students must:

- be U.S. citizens or meet eligible non-citizen criteria;
- be admitted to and pursuing an eligible degree or certificate program;
- be enrolled on at least a half-time basis;
- meet requirements pertaining to the Statement of Educational Purpose/Selective Service registration; and
- not be in default on a federal loan program or owe a repayment to a federal grant program.

All financial aid applicants must submit the Free Application for Federal Student Aid (FAFSA) each year aid is desired. Applicants who were financial aid applicants at any college or university during the previous school year receive a Renewal FAFSA in November or December of the current year. Those who were not financial aid applicants and those who do not receive a Renewal FAFSA must complete a new FAFSA. These forms are available at all Virginia Commonwealth University/Financial Aid Offices, financial aid offices at other colleges and universities, high school guidance offices, and most public libraries.

The deadline for mailing the FAFSA or Renewal FAFSA is April 15 and March 15 for

students entering programs on the MCV Campus. Students mailing the FAFSA after April 15 will be considered late filers, and their financial aid may not be processed until after the beginning of the school year. Late filers need to pay their university bills when due or pay on the Bursar's Office Installment Payment Plan.

The FAFSA, or Renewal FAFSA, should be filed using the figures from completed tax returns. When requested, filers must submit copies of tax returns. However, if estimated tax figures must be used to file on time, they should be used and the FAFSA or Renewal FAFSA mailed on or before the April 15 or March 15 deadline.

Applicants who have attended other colleged or universities must submit Financial Aid Transcripts for all institutions attended, whether or not they received financial aid. No offer of financial aid will be made to a student until all financial aid transcripts are received.

## DETERMINING A STUDENT'S FINANCIAL AID PACKAGE

All students are eligible to apply for the Federal Stafford Loan (FSL). The student pays the interest, or capitalizes it, on the portion of the loan not based on financial need. Interest on the portion of the loan that is based on financial need is subsidized by the federal government.

Financial need is the difference between the amount a student and the student's family can contribute, as determined from the information submitted on a FAFSA, and the total expected cost of education. The cost of education includes tuition and fees, books and supplies, housing and food, transportation, clothing, health, personal maintenance, miscellaneous expenses, and child care, if applicable. The student's financial eligibility must be determined before an offer of financial aid can be made.

Students receiving departmental or outside scholarships must notify UES/Financial Aid of these awards. Offers of financial aid for these students may be adjusted.

## PROGRAM DESCRIPTIONS

Additional aid program information and details are provided in separate financial aid publications available from the financial aid offices.

There are three basic types of financial aid. Each type has different features and advantages.

**Loans.** In terms of total dollars available, there is more money available from long-term loan programs than from the other two types of aid. Loans are amounts of money borrowed which must be repaid at a later time. The student is the

borrower and repays the loan once no longer enrolled in a post high school institution. All educational loans carry favorable interest rates. Some loan programs include interest benefits, meaning the federal government pays the interest on the loan while the student is enrolled. Some of the more popular loan programs are:

### Federal Loan Program

- Federal Stafford Student Loan
- Federal Parent Loan for Undergraduate Students
- Perkins Loan

### Health Profession Loan Programs

- Health Education Assistance Loan
- Health Professions Student Loan
- Primary Care Loans
- Nursing Student Loans
- Loans for Disadvantaged Students

**Short Term Loans.** In addition to the above long-term loans, Virginia Commonwealth University offers short-term loans to enrolled students to be repaid during the semester the loan is granted.

**Grants/Scholarships.** Grants are gifts of money awarded without any expectation of repayment. The total dollar amount of grant aid is much less than the dollar amount of loan aid available. Graduate students should contact individual academic departments for information about grant programs. Most grant programs are limited to undergraduate or first baccalaureate degree programs.

### Undergraduate Programs

- Federal Pell Grant
- Virginia Undergraduate Grant
- Federal Supplemental Educational Opportunity Grant
- College Scholarship Assistance Program Grant
- Virginia Transfer Grant Program
- VCU Undergraduate Scholarship Program
- Department Scholarships

### Health Profession Programs

- Scholarships for Disadvantaged Students
- Exceptional Financial Need Scholarship
- Financial Assistance for Health Profession Students
- State Dental Practice Scholarships
- Virginia Medical Scholarships
- General Assembly Nursing Scholarships
- Departmental Scholarships

**Work Study.** Work study is a form of financial aid that pays wages for work performed. Work study positions are located on and off-campus in approved locations and includes Federal Work Study.

## GRADUATE ASSISTANTSHIPS AND FELLOWSHIPS

A number of University graduate teaching and research assistantships, fellowships, and tuition scholarships, as well as a variety of departmental awards, are made each year to continuing and newly-admitted graduate students. Eligibility is based on a variety of criteria. Students should be aware that these awards must be included in the total financial aid award made to students receiving additional aid through UES/Financial Aid. Students also should be aware that all stipend support is reported to the Internal Revenue Service and is subject to IRS rulings as to tax status.

Special rules are associated with accepting a position as a graduate assistant and are contained in the *VCU School of Graduate Studies Policies and Procedures Statement on Graduate Fellowships and Assistantships*. A student planning to accept an assistantship must be familiar with this document, a copy of which is included with the graduate dean's official assistantship award letter. A University graduate assistant is precluded from any other type of employment and foregoes the normal student academic vacations for the period of the appointment. Graduate program directors and prospective graduate assistants should agree upon the specific conditions of employment before finalizing appointments.

Inquiry about such awards should be made directly to the school or department in which the student intends to enroll. Students in the process of applying for admission should indicate their interest in such support. Some programs include a separate application for support with the application for admission.

## ISSUES AFFECTING ELIGIBILITY FOR FINANCIAL AID

**Quality Assurance.** UES/Financial Aid is committed to fair and equitable delivery of financial assistance to all eligible applicants. To ensure that the application information used to determine financial eligibility is complete and accurate, student records may be selected for future review at any time during a period of enrollment to determine the reliability of the information. In signing the FAFSA certification, students and families have indicated their willingness to provide proof of the information provided on the FAFSA. If requested, the required documents and information must be provided to UES/Financial Aid or disbursed aid will be recovered and undisbursed aid will be canceled.

**Special Circumstances Affecting Financial Eligibility.** Whenever there are special circum-

stances that affect the cost of education or the amount a student and student's family can contribute toward the cost of education, the student should contact a financial aid counselor. There must be sound, demonstrable cause to make adjustments. Adequate written documentation and proof of cause is required before adjustments can be made.

## REASONABLE ACADEMIC PROGRESS POLICY FOR RECIPIENTS OF FINANCIAL AID

In order to be eligible to receive financial aid from federal, state, or institutional programs at VCU, students must make reasonable academic progress in their certificate or degree programs.

The criteria for reasonable academic progress are listed below:

1. Undergraduates who have attempted fewer than 30 hours must have earned at least 70 percent of the hours attempted at VCU.
2. Undergraduates who have attempted 30 or more hours at VCU must have earned at least 80 percent of the hours attempted at VCU.
3. Undergraduates who have been enrolled for more than four enrollment periods (i.e. fall, spring, summer) must have earned a cumulative grade-point average (GPA) of 2.00 or above.
4. Graduate students must earn at least 80 percent of course work attempted after being admitted to the graduate school.
5. Graduate students who have been enrolled in one or more graduate programs for more than four enrollment periods (i.e. fall, spring, summer) must have earned a cumulative GPA of 3.00 or higher in all coursework attempted after classification as a graduate student.
6. Undergraduate students may receive financial aid for a period not to exceed the equivalent of 12 semesters of full-time enrollment. Graduate students may receive financial aid for a period equivalent to six semesters of full-time enrollment for the master's degree and six semesters for the doctoral degree. Students admitted to certificate programs may receive financial aid for the equivalent of four full-time semesters.
7. Students who receive aid and withdraw from all classes in two successive semesters shall not have made reasonable academic progress.
8. Medical and dental students who are required by their academic deans to repeat a

year are permitted to continue on financial aid for that year.

Students whose eligibility for financial aid has been suspended for lack of reasonable academic progress may appeal the action. The appeal must be in writing and received by the financial aid director no later than 30 days after the date on the letter of notification. Students will be notified in writing of the results of the appeal.

At the end of each academic year, reasonable academic progress status will be determined by University Enrollment Services/Financial Aid. This determination will be made during May.

### ENROLLMENT AND ELIGIBILITY

Financial aid eligibility is based on projected enrollment level as reported on the FAFSA—full-time, half-time, or less-than-half-time.

#### Undergraduate

Level	Credit Hours
Full-time	12 or more
Three-quarter-time	9 to 11
Half-time	6 to 8
Less-than-half-time	1 to 5

#### Graduate/Professional

Level	Credit Hours
Full-time	9 or more
Half-time	5 to 8
Less-than-half-time	1 to 4

Since a reduction in credit hours may result in loss of financial aid, students should consult with a financial aid counselor before making any changes in their enrollment status.

### FINANCIAL AID APPEAL POLICY

Financial aid decisions are made within the guidelines of federal and state regulation and comply with institutional regulations, policies, and procedures. Regulations are applied uniformly to all students and situations. If a student determines that financial aid, when combined with the amount the student and the student's family can contribute toward the cost of education will not adequately meet educational and living expenses, the student should consult with a financial aid counselor. If after a counselor review, the student is not satisfied that full consideration has been received, an appeal may be made to the appropriate campus assistant or associate director for counseling services, and then to the director of financial aid.

### VETERANS EDUCATIONAL BENEFITS

For information on eligibility to receive veteran and reservist educational assistance, please

contact the Office of Veterans Services, University Enrollment Services/Financial Aid, Room 107, 901 West Franklin Street, P.O. Box 843026, Richmond, VA 23284-3026.

To receive educational benefits, the veteran student must comply with the following procedures:

1. Veteran students must request certification each semester and each summer session from the Office of Veterans Services.
2. Veteran students withdrawing from VCU or dropping a course must notify University Enrollment Services and the Office of Veterans Services.
3. Benefits will not be awarded for courses taken on an audit basis. Also, if the veteran student is repeating a course or taking a course with no credits, this must be brought to the attention of the Office of Veterans Services.

### REFUND POLICY

Students are entitled to refunds according to the policies outlined under "Refunds" in this section of this bulletin.

### STUDENT REFUND/FINANCIAL AID REPAYMENT POLICY

Students who withdraw from classes must have eligibility for a refund calculated. The Student Accounting Office will forward requests for refunds to UES/Financial Aid.

When the certified date of withdrawal occurs during the refund period, a corresponding proration of financial aid eligibility must be made. This calculation may result in a reduction in the financial aid eligibility and a possible return of funds to one or more financial aid programs. Students should consult with a financial aid counselor before making a change in enrollment status during the refund period. If the change in enrollment occurs after the disbursement of all financial aid funds, the student may be required to reimburse the financial aid programs.

### SUMMER STUDIES FINANCIAL AID

Financial aid is available for summer studies to students who were eligible for aid the previous academic year and is calculated using the previous year's FAFSA. The choice of aid programs is limited.

Application deadlines and processing schedules for summer studies financial aid are published in the *Summer Bulletin*. Processing is usually restricted to the third week of April. Students seeking financial aid for summer must

have participated in advance registration for their summer studies classes.

While study during the summer often benefits the student academically, use of financial aid eligibility during the summer may reduce eligibility during the following academic year. Consult with a financial aid counselor before applying for summer aid.

### FINANCIAL AID FOR STUDY ABROAD

In most cases, financial aid is available to eligible students for both academic year and summer approved study-abroad programs. Students should begin this application process by contacting the VCU Center for International Programs.

### INTERNATIONAL STUDENTS

Students should inquire about services and assistance through the Center for International Programs/International Student Services Office.

## General Academic Regulations

### ADVISING PROGRAM

Students are responsible for the proper completion of their academic program. They should be familiar with the MCV Bulletin, including general academic regulations and any other supplementary academic regulations presented in their individual school sections. The offices of the deans and department chairmen, in cooperation with the faculty, endeavor to follow each student's academic progress; and students are encouraged to seek counsel whenever there is a need. If an advisor is unable to resolve a problem satisfactorily, the student will be referred for further advice as is deemed appropriate and necessary.

### ATTENDANCE/CONTINUANCE POLICIES

Attendance and continuance policies vary among the individual schools and may be found under the appropriate sections in this bulletin. As a general rule, class attendance requirements are announced by instructors at the first class meeting.

### CANCELLATION OF REGISTRATION

A cancellation of registration must be made prior to the first day of classes by notifying in writing University Enrollment Services and the dean of the school in which the student matriculated. Refunds will be issued in accordance with procedures set forth under the Refunds section of this bulletin.

## REGISTRATION POLICIES AND PROCEDURES

Students registered for a planned program are expected to maintain their registration except for special reasons. Should a change in program be deemed advantageous to the student and the school by the appropriate school dean, the student may make the change during the add/drop period or the withdrawal period. Changes in registration are performed at University Enrollment Services/Registration under the following procedure:

- a. A Course Request Form, obtained at UES/Registration, is used to add, drop or withdraw courses. For any change to a student's schedule, the Course Request Form must be signed by a dean or graduate advisor in the school in which the student is enrolled with the exception of Allied Health Professions students whose forms must be signed by the chairperson of their department.
- b. A student's failure to properly complete and return a Course Request Form when he or she ceases to attend a class will normally result in the assignment of a failing grade in the course.

### Add/Drop

A course will be added or dropped from a student's schedule only after the Course Request Form is properly completed and returned to UES/Registration. Dropped courses do not become part of the student's permanent academic record.

Following the add/drop period, no courses may be added or dropped except under unusual circumstances and with the written authorization of a dean in the school in which the student is enrolled.

### Withdrawals

After the add/drop period and before the end of the first eight weeks of classes, students may withdraw from courses. A course will be withdrawn from a student's schedule only after the Course Request Form is properly completed and returned to UES/Registration. Withdrawn courses will remain a part of the student's permanent academic record and will carry the grade of "W."

Following the withdrawal period, no courses may be withdrawn except under unusual circumstances and with the written authorization of a dean in the school in which the student is enrolled.

### Audits

Students may register for audit only during the add/drop and late registration period as a new

registration and not as a change from credit to audit. A course taken for audit cannot be given credit at a later date. Audited courses will remain a part of the student's permanent academic record and will carry the grade of "AU."

A student who registers for audit may be administratively withdrawn by an instructor for a violation of the class requirements for auditors, before or after the normal eight-week withdrawal deadline.

### Refunds

Refunds for drops or withdrawals are granted according to the procedures set forth under the "Refunds" section of this bulletin.

### STUDENT LOAD

First-professional students (seeking M.D. or D.D.S. degrees) are always defined as full-time students unless specifically designated otherwise by the individual school dean.

In those programs where it is used, a semester credit is defined as one hour per week of lecture-recitation or not less than two hours per week of laboratory work throughout a semester.

### Graduate Level

Student load is the total number of credits for which students are enrolled in any semester. Students who are fully funded as university graduate assistants with tuition remission are classified as "full-time" during any semester in which they must enroll for 12 or more credits (six during the summer if funded on a 12-month stipend.) Other graduate students, for tuition purposes, are considered full-time if they register for nine or more hours.

Degree-seeking students may be either full-time or part-time, depending on program rules.

The maximum number of credits for which students may enroll in any semester without special permission is 16. More than 16 credits is an overload. Permission to enroll for more than 16 credits will be granted upon the written recommendation of the advisor to the dean of the School of Graduate Studies.

### Undergraduate Level

**Full-time Students.** In general, students on the MCV Campus carry more than 15 credits per semester.

**Part-time Students.** A student is classified as "part-time" if during any semester he or she is registered for less than the number of credits specified as full-time for a given program. The

term "part-time" applies to degree-seeking students as well as to nondegree-seeking ("special") students.

### CHANGE OF MAJOR

Students wishing to change their major must apply through the regular procedures outlined in this bulletin.

Students who are currently enrolled and in good standing in a program on the MCV Campus and who wish to change to a curriculum on the Academic Campus will do so through a change of major. Such students are subject to the continuance policy of the Academic Campus in making a change of major.

### WITHDRAWAL FROM THE UNIVERSITY

Voluntary withdrawals from any of the schools or programs must be approved in writing by the dean of the school in which the student is enrolled and the Office of Student Accounting; otherwise, a student will not be entitled to honorable dismissal.

Students finding it necessary to withdraw before the end of a semester must complete an official university withdrawal form obtained from University Enrollment Services.

For students officially withdrawing from the University before mid-semester (end of the eighth week), the permanent record will indicate a grade of "W" for each course being pursued.

For students withdrawing without permission, the permanent record will carry a notation, "Withdrawn Unofficially," and the grade of "F" will be assigned for each course pursued at the time of unofficial withdrawal.

### HEALTH-RELATED WITHDRAWALS

While most students on the MCV Campus are expected to work toward completion of their degrees without interruption, health-related problems may necessitate withdrawal from the University.

1. Health-related withdrawals must be approved in writing by the dean of the appropriate school.
2. The student must furnish the Office of the Dean a written request for permission to withdraw for health reasons together with a statement from his/her physician indicating the nature and severity of the condition, when the student should stop attending classes, and the estimated date of return to school.
3. In the event that the student's health problem poses a danger to the student, to pa-



tients, or to others with whom the student may come in contact and the student is unable or refuses to initiate steps to withdraw as stated in Item 2 above, administrative withdrawal of the student may be made by the dean of the school upon consultation with the appropriate faculty and a qualified physician.

4. If it is the decision of the dean to grant the withdrawal, the student will receive written notice stipulating conditions and time limits.
5. All tuition refunds or adjustments will be made in accordance with university policy as stated in this bulletin.
6. Because curricular and course content changes may occur and a student's progress toward a degree may be adversely affected due to an extended absence, specific time periods may be imposed by individual schools with respect to the length of time allowed for absence from school. If there is a delay in return beyond the allotted time period without written consent of the Office of the Dean, the student will petition for return with advanced standing. The petition will be processed according to regularly established procedures of the school.
7. Prior to return to school, the student must submit to the dean a statement from his/her physician. This statement should document that the condition which necessitated the withdrawal has been corrected to a point where the student can successfully complete all curriculum requirements with reasonable accommodation, including classroom, laboratory, clinical, and field work experiences.
8. After the decision to readmit the student is made, the dean will inform the student in writing when he/she can resume class attendance. The student will be required to meet curricular requirements as specified by the dean.

### TERMINATION OF ENROLLMENT

The University reserves the right to terminate the enrollment of any student for unlawful, disorderly, or immoral conduct, or for persistent failure to fulfill the purposes for which he or she was matriculated. Any students whose relations are so severed forfeit all rights and claims with respect to the institution.

In addition to dismissal for failure to comply with standards of conduct described in the *Rules and Procedures of the University and the Virginia*

*Commonwealth University Honor Code*, a student enrolled in MCV/VCU may be dismissed from the school in which he or she is enrolled for failure to meet academic requirements prescribed by his or her school or failure to exhibit the attitudes and skills deemed necessary to function within the chosen professional practice. Virginia Commonwealth University recognizes its responsibilities to the health professions and to the consumer of health services. Therefore, any action by a student of MCV/VCU considered to be unprofessional conduct according to the code of ethics and the laws and regulations governing the student's chosen profession, shall constitute cause for disciplinary action.

Unprofessional conduct includes, but is not limited to

1. Fraud or deceit in gaining admission to the University, i.e., false or obviously misleading representations on the admissions application.
2. An act that violates the established legal standards regarding conduct of one person towards society, i.e., stealing, lying, cheating, and slander.
3. Conviction of a felony involving moral turpitude.

The individual health sciences schools recognize and support the statements set forth by the licensing boards of the respective health professions as they relate to examination, licensure, and the practice of each profession. When applicable, these standards may be used in determining a student's eligibility for continuance in or readmission to the University.

### DEGREE REQUIREMENTS

Candidates for degrees are eligible for graduation upon completion of their school's requirements in effect at the time of first registration, provided requirements are met within the time limit specified by the school, not to exceed a period of seven years.

The institution reserves the right, however, to require students whose programs are interrupted for any reason to meet requirements as specified by the dean or director of the program. Changes in the student's original program may be necessary when, for example, a curriculum has been revised, offerings are no longer available, significant changes in course content have occurred, or repetition of material is deemed essential to ensure continuity and clinical competence. Students failing to satisfy the time requirement shall satisfy requirements in effect at the time of readmission into the degree program.

Most of the health sciences programs include clerkships or practicums as a required part of their curricula. Some of these activities may be provided in off-campus facilities requiring students to travel and reside some distance from Richmond. As a rule, no refund of payments for tuition, fees, or other purposes may be expected by the students if credit is granted for time spent in this phase of the program.

All degrees are conferred by the VCU Board of Visitors upon recommendation of the faculties of the various schools. Degrees are granted at the close of the semester or summer session in which the students complete their work.

Candidates for degrees to be conferred at the close of the spring semester must be present to receive their degrees unless excused by the deans of their schools. No individual may be exempt from this regulation.

**Graduate and Professional Degrees.** Degree requirements are specifically outlined in the various school sections in this bulletin.

**General Undergraduate Degrees.** In addition to the course requirements indicated in the curriculum outlines, candidates for degrees are governed by the following policies:

**Grade-Point Average.** An overall grade-point average (GPA) of at least 2.0 (a "C" average), except as may be specified for certain programs, is required on all work presented for either the associate or bachelor's degree.

**Required Credits.** The total number of semester hour credits required for graduation depends on major area of concentration and the type of degree.

**Resident Requirement.** Degree candidates are required to complete the last 30 credits for a bachelor's degree and the last 15 credits for an associate degree at this institution.

**Double Major Concentration.** A double major is the fulfillment of requirements in two majors. For further information consult the Virginia Commonwealth University Undergraduate Bulletin or Graduate Bulletin.

## GRADING SYSTEM

**Grade Reports.** An official university grade report showing the student's standing in courses and grade-point average, when specified by the school, will be mailed each semester and at the end of the summer sessions to the student's mailing address as designated on the registration form.

**Grade-Point Average.** The grade-point average, reflecting semester and/or cumulative work

as specified by each school, is computed by dividing the number of grade-points earned by the number of semester hours attempted for which grades "A" through "F" have been as signed. The GPA is intended to assist students in analyzing work performance and in determining areas requiring greater attention.

**Grade Review Procedure.** If a student feels that a grade is inaccurate, the student should discuss the grade with the instructor. This will allow the instructor to explain how the final grade was determined and, if an error is detected, to submit a change of grade. If no agreement is reached and the student feels that the grade was unfairly assigned, he or she may follow the provisions of the Grade Review Procedure which is available in each dean's office and is printed in full in the *VCU Resource Guide*.

**Repeated Courses.** Because some schools do not allow students to repeat courses, any student planning to do so must first consult with his or her advisor, program director, or department chairman.

The semester credits attempted and the grade-points earned for all attempts are included in computing the cumulative grade-point average. No matter how often a course is repeated, it may be counted only once as credits presented toward graduation.

## GRADES

Work quality is measured by the four-point grade system with the following equivalents:

Grade Symbol and Meaning	Grade-Point Value Per Semester Credit
A	4.0
B	3.0
C	2.0
D	1.0
F	0.0
I = Incomplete	—
P = Pass	—
AU = Audit	—
W = Withdrawn	—
H = Honors	—
PR = Progress	—
CO = Continued	—
NC = Grade assigned for continuing enrollment	—
NG = Administrative grade assigned when no grade submitted by the instructor.	—

Grades designated by a blank, (—), in the grade-point column are not considered in the computation of hours attempted, hours earned, grade-points earned, or grade-point average.

**I = Incomplete**—The grade of incomplete is assigned when course requirements, because of

circumstances beyond the student's control, cannot be met by the end of the semester. The awarding of an "Incomplete" presupposes an understanding between the instructor and the student. Routine use of the grade of "I" is discouraged.

a. With the exceptions of the Schools of Medicine and Dentistry, the maximum limit for the removal of an "Incomplete" from the permanent record card is the end of the last day of classes of the semester (or summer session) following the term in which the "Incomplete" was incurred. For programs leading to either the M.D. or D.D.S. degrees, the maximum time limit is the last day of classes of the second following semester after the semester of registration in the course or specified project. At the end of the specific semester an unremoved grade of "Incomplete" may be changed to a failing grade. Any exceptions to this regulation must be extraordinary in nature and must be approved by the dean of the school involved upon the recommendation of the instructor; a written statement must be filed with University Enrollment Services.

b. The "Incomplete" will not be computed into the student's grade-point average.

c. **If course requirements are not completed by the end of the specified semester, a grade of "F" will be assigned.**

**W = Grade of withdrawn**—The grade of "W," denoting a student's withdrawal from a course, will be assigned to any course dropped after the official add/drop period but prior to the mid-semester point (the eighth Friday after the first full week of classes). For courses scheduled in block periods, the grade of "W" will be assigned if the course is dropped prior to the mid-point of the block period. The grade of "W" will appear on the student's academic record but will not be computed as work attempted or computed into the GPA.

**AU = Grade of audit**—Upon the approval of the student's advisor and the instructor and when class size permits, a student may register for a course on an audit basis. Audit students are charged the regular rate of tuition and fees, and audit courses are counted as a part of the student's semester credit hour total. A student auditing a course is subject to attendance regulations and may be subject to other course requirements at the discretion of the instructor. A grade of "AU" will be entered on the academic record of all students enrolled for audit.

**H = Honors**—Courses assigned the "Honors" grade will not be computed into the grade-point average.

**P = Grade of Pass**—Awarded as a grade for certain courses to denote satisfactory completion of requirements. Courses assigned the grade of "P" will not be computed into the grade-point average.

**NC = Grade of NC**—This grade may be assigned as an interim grade for work on thesis or dissertation.

**PR = Grade of Progress**—Assigned as an interim grade for certain continuing courses, research, or thesis projects which run over several grade reporting periods. The grade of "PR" may be assigned only in courses approved for such grading. Unlike the grade of "I," the grade of "PR" will not automatically be changed to a failing grade at the end of the succeeding semester.

**CO = Grade of Continued**—The grade of "CO" may be assigned as an interim grade for those courses which run over several grade reporting periods. The "CO" indicates that the course is not expected to be completed in a single semester and that the student must reregister for the course. Upon completion of the course, a final grade will be assigned to the current semester and the previous "CO" grade(s) will remain. This grade may be assigned only in courses approved for such grading.

## SCHOLARSHIP HONORS

**Dean's List.** For certain schools, students are placed on the dean's list for one semester if they have earned a grade-point average of 3.5 in the preceding semester, based on a minimum load of 15 credits with no grade below "C." Students with grades of incomplete or who are absent from the final examination are not eligible for the dean's list.

**Graduation Honors.** Candidates for degrees in certain schools may be eligible for special scholarship recognition under the following conditions:

**Summa Cum Laude.** Awarded for a cumulative grade-point average of 3.9 and above on all credits attempted.

**Magna Cum Laude.** Awarded for a cumulative grade-point average of 3.6 to 3.89 on all credits attempted toward the degree awarded.

**Cum Laude.** Awarded for a cumulative grade-point average of 3.3 on all credits attempted toward the degree awarded.

Graduation honors for medical students will be determined by the Medical School Promotion Committee.

A transfer student, to qualify for graduation honors for the baccalaureate degree, is required to complete a minimum of 45 credits at VCU with

a scholastic average of 3.9 or above for summa cum laude, 3.6 to 3.89 for magna cum laude, and 3.3 to 3.59 for cum laude. Performance at other institutions must be of sufficient quality to sustain the above averages.

Recognition of graduation honors will be made on the student's diploma, permanent academic record, and in the commencement program.

## GRADUATION APPLICATION

The University confers degrees in May, August, and December; however, it holds an annual commencement exercise in May only. Each student who expects to complete the degree requirements by the end of a semester or summer session is required to file an application for a degree. Application forms may be obtained from the dean's office of the school in which the student is enrolled. Students must submit degree applications to the dean's office no later than the dates indicated in the university calendar.

## TRANSCRIPTS

The transcript is a copy of the student's permanent academic record. An official transcript carries the university seal. Transcripts given directly to students do not carry the university seal.

Transcripts of student academic records are issued by University Enrollment Services/Records only upon the written request of the student. The request should be made at least one week prior to the date needed.

No transcript will be issued unless indebtedness to the University has been satisfied.

Transcript requests signed by the student may be submitted in person or by mail to University Enrollment Services/Records, Virginia Commonwealth University, P.O. Box 980277, Richmond, VA 23298-0277.

## LIMITATIONS ON BULLETIN PROVISIONS

All rules and regulations set forth in this bulletin will apply until further notice. The University reserves the right to make changes in courses of study, fees, rules, and regulations governing the conduct of the work in all schools and programs, faculty and staff, and classification of students whenever university authorities deem it expedient or wise to do so.

## GENERAL COURSE INFORMATION

### Course Numbering

Courses numbered in the 100 and 200 series comprise the lower-division offerings and are

open to all students; courses numbered in the 300 and 400 series comprise the upper-division offerings and are designed primarily for juniors and seniors. Courses in the 500, 600, and 700 series are for fifth-year pharmacy, first-professional, and graduate students.

Evening and summer studies offerings are the same as those listed herein.

### Course Numbering System

1. All course numbers consist of three digits (XXX).
2. The first digit relates to the course level as follows:
  - a. 0XX Noncredit
  - b. 1XX Undergraduate, Lower Level  
2XX
  - c. 3XX Undergraduate, Upper Level  
4XX
  - d. 5XX Introductory Graduate  
First-Year, First-Professional  
(Medicine and Dentistry)  
Fifth-Year Professional  
Baccalaureate (Pharmacy)
  - e. 6XX Graduate  
7XX  
8XX  
6XX Second-Year, First-Professional  
(Medicine, Dentistry, and  
Pharmacy)  
7XX Third- and Fourth-Year, First-Professional (Medicine and Dentistry)

### Course Interpretation

A single number listing for a course, such as PMC 638, indicates that it is a one-semester course and may be offered each semester or only one semester each year.

Courses listed with a double number, such as PHA 635, 636 and designated as semester courses, consist of two one-semester courses, either semester of which may be taken without the other.

Courses listed with a double number, such as PHT 307-308 and designated as a continuous course, consist of two one-semester courses, the first of which can be taken without the second, but the second of which cannot be taken without the successful completion of the first.

The University reserves the right to withdraw any course or program.

## ABBREVIATIONS

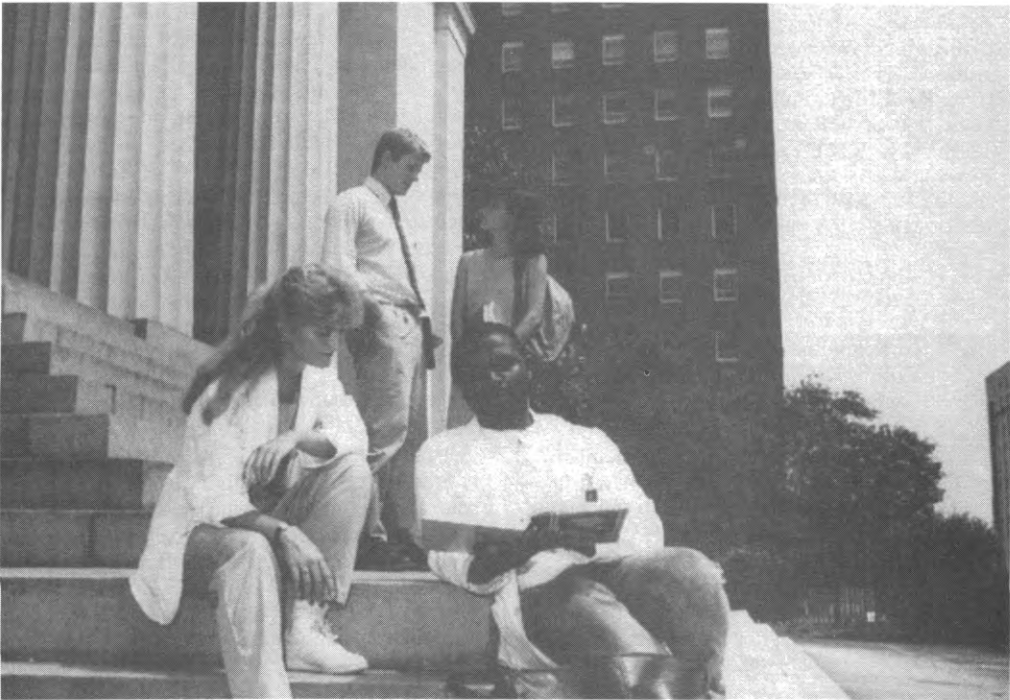
AHP	Allied Health Professions
ANA	Anatomy
BIC	Biochemistry and Molecular Biophysics

## 32 ▼ GENERAL INFORMATION

BIO	Biology
BIS	Biostatistics
BME	Biomedical Engineering
BUS	Business
CHE	Chemistry
CLS	Clinical Laboratory Sciences
CRS	Clinical Radiation Science
CSC	Computer Science
DEH	Dental Hygiene
DEN	Dentistry
ECO	Economics
EDU	Education
END	Endodontics
GEN	Human Genetics
GEP	General Practice Dentistry
GRS	Graduate Studies
GTY	Gerontology
HAD	Health Administration
INH	Industrial Hygiene
MAC	Mass Communications
MAT	Mathematics
MED	Medicine
MIC	Microbiology and Immunology
MPH	Public Health
NUA	Nurse Anesthesia

NUR	Nursing
OCC	Occlusion
OCT	Occupational Therapy
ORP	Oral Pathology
ORS	Oral and Maxillofacial Surgery
ORT	Orthodontics
PAC	Patient Counseling
PAT	Pathology
PED	Pediatric Dentistry
PER	Periodontics
PHA	Pharmacy
PHC	Medicinal Chemistry
PHT	Physical Therapy
PHY	Physics
PIO	Physiology
PMC	Pharmacology and Toxicology
PRS	Prosthodontics
PSY	Psychology
RTE	Radiologic Technology
SOC	Sociology
SLW	Social Work
STA	Statistics

For other abbreviations, consult the *VCU Undergraduate Bulletin* or the *VCU Graduate Bulletin*.



# PART II

## SCHOOL ▼ OF ▼ MEDICINE

**HERMES A. KONTOS, M.D., Ph.D.**

Interim Dean

**REUBEN B. YOUNG, M.D.**

Senior Associate Dean

**WILLIAM M. GLEASON, M.B.A.**

Associate Dean, Administration

**ROBERT P. PERRY, M.D.**

Associate Dean, Graduate Medical Education

**JAMES M. MESSMER, M.D.**

Associate Dean, Academic Affairs

**HEBER H. NEWSOME, M.D.**

Associate Dean, Clinical Services

**HUGO R. SEIBEL, Ph.D.**

Associate Dean, Student Affairs

**WILLIAM K. STACY, M.D.**

Associate Dean, Veterans Affairs

**DONALD M. SWITZ, M.D.**

Associate Dean, MCV Hospitals Ambulatory Care Activities

**PAUL E. MAZMANIAN, Ph.D.**

Assistant Dean, Medical Education

Hospital facilities on the MCV Campus include both inpatient and outpatient facilities. MCV Hospitals is licensed for 902 beds. In addition, the hospital at the McGuire Veterans Affairs Medical Center provides excellent patient care, training, and research opportunities for the School of Medicine through its affiliation programs.

Basic health sciences historically have been an integral part of the curriculum of medicine, dentistry, pharmacy, nursing and allied health disciplines. In the earlier years of the university, the basic sciences departments were administered by the School of Medicine. Between 1966 and 1994, a separately established School of Basic Health Sciences administered the basic sciences departments, instruction in basic sciences for students in other health sciences programs, and selected graduate degree programs. By action of the University's Board of Visitors, the School of Basic Health Sciences was again merged with the School of Medicine effective July 1, 1994.

### GENERAL INFORMATION

The mission of the School of Medicine is constant improvement of the quality of health care for citizens of Virginia, using innovative, scholarly activity to create new knowledge, to provide better systems of medical education, and to develop more effective health care methods.

The School of Medicine shares the general objectives of the Medical College of Virginia of Virginia Commonwealth University:

1. To maintain an environment of educational excellence that will attract students and

**T**he School of Medicine of the Medical College of Virginia opened on November 5, 1838, as the medical department of Hampden-Sydney College.

Full-time clinical faculty members were first appointed in 1928, and improved facilities became available between 1936 and 1941 with completion of the 600-bed West Hospital, A. D. Williams Clinic, and Hunton Hall dormitory, which was located on the current site of the Main Hospital building. Growth in faculty, students, and facilities continued after World War II leading to the development of today's academic health center.

faculty interested in an institution maintaining the highest academic standards.

2. To promote an educational atmosphere that will develop in students: (a) desire and interest in lifelong learning, (b) intellectual curiosity, and (c) excellence in skills and knowledge required for the solution of problems of health and disease.
3. To provide standards of clinical practice and scientific investigation that will serve students as examples throughout their professional careers.

The primary aim of the School of Medicine is to provide an academic environment appropriate for the education of its students, including undergraduate medical students and graduate physician house officers, and continuing education directed towards the needs of practicing physicians. In the classroom, laboratory, clinic, and hospital, the faculty and students are brought together in teaching-learning experiences promoting scientific scholarship and personal growth in knowledge and professional skills.

The School of Medicine and its faculty have vested responsibilities for the advancement of knowledge through research and for service to the community through application of skills in health care leadership and patient care. Therefore, we share with teaching the interdependent and almost inseparable objectives of research and service.

## FACULTY AND FACILITIES

The School of Medicine consists of 700 full-time faculty, including affiliates, assisted by 630 residents and fellows and over 700 clinical voluntary faculty. Programs of instruction and research are conducted on campus, at the McGuire Veterans Affairs Medical Center, and at affiliated hospitals in an effort to expose the student to the variety of clinical disorders encountered in the eastern United States. Those affiliated community hospitals beyond Richmond include Northampton-Accomack Hospital in Nassawadox, Johnston Memorial Hospital in Abingdon, Riverside Hospital in Newport News, Rappahannock General Hospital in Kilmarnock, and Radford Community Hospital in Radford.

## Doctor of Medicine Program (M.D.)

### ADMISSIONS

The School of Medicine participates in the American Medical College Application Service

(AMCAS). The AMCAS application forms can be obtained from AMCAS, Suite 301, 1776 Massachusetts Avenue, N.W., Washington, D.C. 20036. The application request forms are available from premedical advisors in all colleges and universities or from the Admissions Office of the School of Medicine, MCV/VCU.

Application for the School of Medicine should be made on or after June 15 of the year preceding intended matriculation. The closing date for filing applications for this institution is November 15 of the year preceding the enrollment date. Priority for admissions is given to Virginia residents. Members of minority groups under-represented in medicine are especially encouraged to apply to the School of Medicine. Students previously dismissed from a medical school will not be considered.

A nonrefundable \$50 application fee and supplemental information, including faculty recommendations, will be required with all applications accepted for further consideration. The final date for returning supplemental information is December 2 of the year preceding possible enrollment in the School of Medicine.

The School of Medicine will not admit students from other health sciences schools at Virginia Commonwealth University until such students have completed the degree program for which they are enrolled.

The School of Medicine participates in the Early Decision Plan. This program permits an applicant to file a single application through AMCAS on or after June 15 but prior to August 1. All applicants filing under the Early Decision Plan will receive consideration for admission and a response on or before October 1. All applications for the Early Decision Plan must be supported by the results of the new MCAT test at the time the application is made.

The early notification date of this plan ensures that those who are unsuccessful have ample time to request further distribution of their applications to other medical schools. Further information on the Early Decision Plan is available with the AMCAS application.

### Requirements for Entrance

The MCAT is required as part of the application. It is necessary that the test be taken no later than the fall of the year of application *since* selections will be complete before the spring test is given in the year of admission. This test is produced by the American College Testing Program, P.O. Box 414, Iowa City, Iowa 52240, and



is administered in colleges and universities throughout the country. Information about the MCAT is available through premedical advisors or directly from the American College Testing Program.

Applicants may be admitted on the basis of 90 semester hours of outstanding achievement; however, the majority of students admitted are completing their baccalaureate programs. The college major for premedical students should be selected in accordance with the individual student's aptitude and interest. The prerequisites for the School of Medicine have been reduced to a minimum in order to permit the widest possible latitude in preparation for medical education.

Prerequisites for admission include a minimum of 90 semester hours (or the equivalent) in a college or university accredited by the regional accrediting agency. This program of study must include a minimum of

1. English — two semesters. (One semester to include grammar and composition.)
2. College mathematics — two semesters.
3. Biological science (eight semester hours), including laboratory experience. This may be satisfied by general biology, general zoology, or botany. No more than half may be botany.
4. General or introductory chemistry (eight semester hours), including laboratory. An appropriate portion of this requirement may be met by courses in analytical chemistry or physical chemistry.
5. Organic chemistry (six semester hours), including laboratory. This course should be equivalent to and acceptable for continued studies in a chemistry major.
6. General or introductory physics including laboratory experience (eight semester hours).

Students are encouraged to pursue their own intellectual interests in college in order to obtain a broad education consistent with their major program. Courses in medically related science areas will not relieve the student of his/her responsibility for these subjects in the medical curriculum.

### Selection Factors

Demonstrated academic skill and ability, as well as attributes of character and personality, are of significance to the Admissions Committee in the selection process. A review of academic achievement as represented by the standard academic record and summaries, MCAT scores,

evaluations, and interviews are all sources of information on which the comparative evaluation process is based.

A review of the completed application file and interviews with members of the Admissions Committee are a definite part of the procedure. The interview is an opportunity for the applicant to become acquainted with the institution, and it offers additional information for the selection process. Only on-campus interviews in Richmond are available.

Each year more applicants are interviewed than can be accepted in each class. Therefore, an interview is not an indication of acceptance to the School of Medicine.

Offers for admission are made, as previously indicated in the Early Decision Plan and on the uniform acceptance date of October 15, with rolling admissions occurring thereafter until the class selections have been completed. The alternate list is constituted from selected and notified candidates at the time the class is filled. It is from this group of applicants that replacements are drawn for any vacancies which may occur in the selected class between that time and the third week of attendance.

Since selections are made in advance of actual attendance, all acceptances are made on condition of satisfactory completion of courses planned or in progress. It is expected that candidates will maintain acceptable standards of deportment.

Students offered acceptance into a class are expected to respond within two weeks of the offer. If such a response presents a problem, extension of the time for the response should be requested. The enrollment of accepted candidates is considered complete only after payment of the \$100 deposit against the first tuition payment. This deposit will be returned to the candidate should withdrawal take place prior to May 15 of the year of attendance.

By the act of matriculating in the School of Medicine, the student accepts the responsibilities related to this opportunity and agrees that during the time that he/she is a registered student he/she will follow the rules and regulations established by the governing bodies of the School of Medicine and the University.

### TRANSFER IN ADVANCED STANDING

Advanced standing admission is open only to students who have not previously been dismissed from any medical school and who are in good standing in American medical schools. Such individuals must present scores for Part I of the

National Board of Medical Examiner's examination as part of the application credentials when transferring to the third year.

A transfer student is accepted to the third year on a space-available basis created by attrition. Application materials and further information may be obtained by writing to Admissions, School of Medicine, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980565, Richmond, VA 23298-0565.

Students in foreign medical schools recognized by the World Health Organization may apply for admission to the first-year class.

## CURRICULUM

The program for the M.D. degree is divided into four phases, each of a year's duration. Medicine I, occupying the first year (late August to early June), emphasizes normal human structure, function, growth, and development. Medicine II, occupying the second year (August to June), stresses the abnormal. Medicine III occupies the third year (July to July) and consists of clinical education and training. The fourth year (Medicine IV), lasting from August to mid-May, consists of approximately one-third required clinical education and training and approximately two-thirds electives at MCV/VCU and at approved medical schools elsewhere in the USA and abroad. Elective opportunities are offered also in M-I and M-II.

One-half- to one-day seminars on each of several practice-related topics are presented during the M-III year. The entire class convenes for these required sessions.

REGISTRATION IN COURSES OFFERED BY THE SCHOOL OF MEDICINE IS RESTRICTED TO STUDENTS ENROLLED IN THE SCHOOL OF MEDICINE AT THE MEDICAL COLLEGE OF VIRGINIA, VIRGINIA COMMONWEALTH UNIVERSITY.

### Medicine I and II

The curriculum is viewed as a dynamic and evolving entity, and course titles, content, or duration of emphasis may be subject to modification for the sake of improving the learning experience.

The first year begins with a two-day program concerned with the human values essential for the complete physician. The scientific courses begin with six weeks of cell biology, a combined course of molecular biology, biochemistry, cellular physiology, ultra-structure, and genetics. This is followed in sequence by the major sciences basic to medicine and by a combined systems

course in neurosciences. The year includes a one-week assignment to the office of a primary care physician.

Course	Length
Human Values	1/2 Week
Cell Biology and Biochemistry	6 Weeks
Anatomical Sciences	11 Weeks
Physiology	14 Weeks
Behavioral Sciences	
Human Genetics	
Epidemiology/Biostatistics	
Neurosciences	5 Weeks
Pathogenesis	11/2 Weeks
Immunology	2 Weeks
Introduction to Clinical Skills	

Each subject matter in M-I and M-II is designed and implemented by a faculty committee, and each phase of the curriculum is supervised by a faculty coordinator. In M-III a committee under a coordinator supervises the clinical experiences, and in M-IV there is an electives committee whose chairman is the M-IV coordinator.

In M-II, the organ system interdisciplinary subject matters are:

Course	Length
Microbiology/Infectious Diseases	6 Weeks
Preventive Medicine/Autonomic Pharmacology	1 Week
Hematology/Oncology	3 Weeks
Central Nervous System	3 Weeks
Gastroenterology	4 Weeks
Behavioral Science	2 Weeks
Respiratory	3 Weeks
Cardiovascular	4 Weeks
Musculoskeletal-Skin	4 Weeks
Renal	3 Weeks
Endocrine-Reproduction	5 Weeks
Introduction to Clinical Medicine (concurrent with the above)	

### Medicine III

Rotation	Length
Internal Medicine	12 Weeks
Surgery	8 Weeks
Pediatrics	8 Weeks
Obstetrics-Gynecology	6 Weeks
Psychiatry	6 Weeks
Neurology-Neurosurgery	4 Weeks
Community Practice	4 Weeks
M-III Combined Workshop	1 Week

### Medicine IV

The School of Medicine, in an effort to serve best the needs and goals of the individual student, offers M-IV students the option of choosing electives during two-thirds of *their senior year*. The elective curriculum has been arranged primarily to allow those students who have definite goals to pursue them logically without adherence to a required curriculum. At the same time, it

allows those who have not yet defined their goals an adequate assortment of electives with which to explore career options. Where standard elective choices seem too limiting, students are encouraged to approach individual faculty members relative to the development of unique courses that more closely approach individual needs. A member of the M-IV Committee is available to advise each student and to approve of each student's program.

The year is divided into nine four-week periods. The required rotations which must be served at the Medical College of Virginia Campus are emergency room, an acting internship, and completion of the "Update of Basic Sciences and Clinical Medicine" course.

A new electives catalog is published each year.

All students are required to take the United State Medical Licensing Examination Step I at the end of M-II and Step II in the fall of M-IV.

In addition, all students are required during their period of matriculation to complete a research project and to submit an acceptable report. The project may be basic or clinical, and a list of preceptors is provided.

## GRADUATE MEDICAL EDUCATION

Clinical training leading to qualification for certification by the American specialty boards is offered in the following programs: general surgery, vascular surgery, thoracic surgery, urology, allergy and immunology, anesthesiology, dermatology, dermatopathology, family practice, internal medicine, neurosurgery, neurology, child neurology, obstetrics/gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology, forensic pathology, neuropathology, pediatrics, pediatric cardiology, pediatric allergy and immunology, pediatric hematology and oncology, nuclear medicine, neonatal-perinatal medicine, physical medicine and rehabilitation, plastic surgery, psychiatry, diagnostic radiology, diagnostic radiology (nuclear), therapeutic radiology, oral surgery, public health, and preventive medicine.

Programs sponsoring a PGY-1 year (internship) are internal medicine, surgery, family practice, obstetrics/gynecology, pathology, pediatrics, anesthesiology, psychiatry, diagnostic radiology, and neurology.

Requests for further information should be directed to the program of interest or the Associate Dean for Graduate Medical Education, School of Medicine, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980257, Richmond, VA 23298-0257.

## CONTINUING EDUCATION

### Mission Statement

The primary goal of the Office of Medical Education at MCV/VCU is to provide continuing educational experiences specifically designed to enhance the delivery of high quality patient care by physicians and other health care professionals in Virginia and other states. The philosophy of continuing medical education is based on the belief that learning must be viewed as a lifelong process. In past generations, the graduating physician was able to look upon an acquired knowledge base as a reasonably stable resource for practicing medicine. However, today's rapidly expanding load of scientific information forces a continuing learning effort upon the physician. Undergraduate and graduate medical education alone can no longer offer reasonable assurance, if indeed they ever could, that practitioners are armed with the knowledge, attitudes, and skills that will enable them to render optimal, achievable patient care through out their careers. Continuing education is now linked with undergraduate and graduate education to complete the continuum of medical education.

The goal and philosophy stated herein undergird and lend direction to the effort of the Office of Medical Education as it engages in a diversity of educational and education-related activities. Specifically, the Office of Medical Education works in concert with the faculty of the School of Medicine as well as other individuals and organizations as appropriate, to

1. Coordinate a state-wide continuing medical education program for several networks of affiliate hospitals.
2. Organize the Virginia Hospital Television Network and provide continuing education programs for physicians and other health professionals directly into hospitals state-wide using satellite and audio-conferencing.
3. Develop and deliver a series of short courses, clinical workshops, seminars, international medical study tours, and conferences for physicians and other health professionals.
4. Provide clinical refresher courses and make readily available self-learning materials and methods.
5. Conduct research to improve the process of continuing medical education.
6. Improve the education of the general public in the proper use of health care resources.

Fostering an appreciation for the concept of lifelong learning in undergraduate and graduate medical school programs is a challenge that is

now being confronted by medical schools throughout the nation. During these critical years, the attitudes of medical students toward continuing pursuits of learning are molded and developed. In order to encourage undergraduate and graduate students at MCV/VCU to embrace the concept of lifelong learning, the Office of Medical Education actively seeks their involvement in its various programs and activities. Brochures, posters, and a yearly catalogue are utilized to announce pending events.

Further information may be obtained by writing the Assistant Dean for Continuing Education, School of Medicine, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980048, Richmond, VA 23298-0048.

### **The Office of Medical Alumni Relations**

The Office of Medical Alumni Relations was established to develop and enhance the School of Medicine's interaction with its alumni. A School of Medicine newsletter, first published in 1987, provides a direct communication link between the school, its departments, and its alumni. All alumni are encouraged to keep the office in formed of personal news for publication. The office and its staff are available to alumni for information, advocacy, and assistance in their contacts with the school and its departments. Staff also will coordinate the new Bed and Breakfast Program for students on residency interviews. Additional student/alumni opportunities will be developed.

The office welcomes ideas and suggestions from all alumni and students at any time. For further information, please contact Director, Office of Medical Alumni Relations, School of Medicine, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980290, Richmond, VA 23298-0290; telephone (804) 225-3578.

### **The Office of Development**

The Office of Development was established to secure private philanthropic support for the School of Medicine. This office is responsible for the identification, cultivation, and solicitation of major gifts to the school from individuals, corporations, and foundations. The office works closely with the school's Office of Medical Alumni Relations, the MCV Hospitals' Office of Development, the MCV Foundation, and the University Advancement Office.

Gifts to the University may be restricted to the School of Medicine by making a gift to the MCV Foundation and designating it for any of the

variety of purposes that fall within the scope of the school's activities. Gifts may be made out right, pledged over a period of years, or made through any one of several planned gift mechanisms which allow for the return of income to the donor after the gift is made.

The Office of Development also helps coordinate several donor recognition events and assists in maintaining contact with past donors to the School of Medicine.

Further information may be obtained by writing to Director, Office of Development, School of Medicine, Virginia Commonwealth University, Medical College of Virginia, P.O. Box 980022, Richmond, Virginia 23298-0022, or by calling (804) 371-7451.

### **ANNUAL LECTURESHIPS**

The Department of Pediatrics sponsors annually a medical education program and the **Sutton Lecture** in honor of the late Dr. Lee E. Sutton, Jr., who was chairman of the department from 1938 to 1958 and dean of the medical school from 1929 to 1942.

The annual **Kinloch Nelson Medical Students Honors Day**, sponsored by the American Medical Student Association and Alpha Omega Alpha, was designated as an expression of appreciation for the leadership Dr. Nelson provided during his tenure as dean of the School of Medicine from 1963 to 1971.

The **Sanger Lecture** was established and endowed by the late Dr. Harvey B. Haag, professor and chairman of the Department of Pharmacology and dean of the School of Medicine from 1947 to 1951, as a tribute to Dr. William T. Sanger for his dedication and service to the institution. Dr. Sanger served as president of MCV from 1925 until 1956, chancellor from 1956 to 1959, and chancellor emeritus from 1959 until his death in 1975. The lectureship annually offers topics of current interest in the area of science and religion to the University and the Richmond community.

The annual **Charles W. Thomas Lectureship** was begun in 1971 in honor of Dr. Thomas, whose bequest of one million dollars led to the establishment of the Charles W. Thomas Arthritis Research Unit for research and education in the area of arthritis, a disease from which he suffered. A graduate of the Medical College of Virginia, Class of 1903, Dr. Thomas was a native of Patrick County, Virginia, and practiced medicine in the state for over 50 years.

In 1973, former residents in obstetrics and gynecology from the Medical College of Vir-

ginia, through their organization, the H. Hudnall Ware, Jr., Society, established the **H. Hudnall Ware, Jr., Visiting Professorship** in honor of H. Hudnall Ware, Jr., M.D., who was professor of obstetrics and gynecology from 1942 to 1967. The visiting professorship is combined with a two-day postgraduate continuing education program which provides information regarding recent advances in obstetrics and gynecology.

The **John Hoover Moon Memorial Lectureship** was established in 1972 as a tribute to John Hoover Moon, M.D., professor of medicine, for his outstanding contribution to teaching and research. A graduate of the School of Medicine, 1949, he was the first clinical research fellow in the Division of Hematology. His research interests centered around the chemotherapy of malignant disease. The John Hoover Moon Memorial Foundation makes this annual lectureship possible.

The **Carolyn and Howard McCue Lectureship** was initiated September 22, 1987, to honor both of these physicians. The annual one-day lectureship alternates each year with pediatric and medical speakers. It is supported by gifts from family, residents, fellows, and friends through the MCV Foundation.

In recognition of long and brilliant service to the Medical College of Virginia, the Board of Visitors established the annual **Stuart McGuire Lectureship** on May 27, 1929. Dr. McGuire (1867-1948) served as professor of surgery, dean, president, and chairman of the Board of Visitors during his lifetime. The lecture series offers topics primarily in surgery.

The annual **Stoneburner Lecture Series** was initiated in 1946 in memory of Dr. Lewis T. Stoneburner, III, by his comrades in the 45th General Hospital, U.S. Army. Dr. Stoneburner graduated from MCV in 1937 and died in 1943 while serving his country as an army officer in North Africa. The lectures annually offer topics of current interest in medicine.

## COMBINED M.D. AND M.S. OR PH.D. PROGRAMS

The School of Medicine encourages applications from individuals interested in the combined M.D./Ph.D. program. This program provides superior preparation for a career in academic medicine or medical research. The program has successfully trained independent medical research scientists and academicians.

Students interested in this combined degree program must be accepted by both the M.D.

program and one of the Ph.D.-granting programs within the School of Medicine. The application process is simplified by acceptance of MCAT and references and transcripts utilized in applying to the School of Medicine. Students in the combined degree program are given credit for basic science instructions received in the first years of medical school. Summers and elective time during these years provide excellent opportunities to begin research training. Almost the entire fourth year may be devoted to graduate school education.

The minimum requirement in addition to the first three years of medical school is one year for the M.S. and two years for the Ph.D. degree. Because the medical school curriculum provides a very broad-based background, combined-degree students are required to take few, if any, introductory-level graduate courses. Graduate school courses should provide in-depth education in one discipline.

Students are advised to declare their research interest in the first academic years because the use of elective and summer time may be critical in their individual schedules. For additional information, students may contact the School of Medicine Admissions Office.

## GRADING AND PROMOTIONS

Each student's progress toward his/her objectives is evaluated by examination upon each subject matter and by national board examinations at appropriate times. Grades are assigned on the honors, high-pass, pass, marginal, or fail basis. Students receiving marginal or failing grades are counseled. All students are assigned a faculty advisor. This advisor is available to the student throughout the four years of study.

Students who have attained satisfactory grades in M-I and M-II but who do not pass National Boards Part I may receive special instruction in the basic medical sciences during the third school year, prior to their repeating the Part I examination. These students will use part of their fourth year to complete the segments omitted during the special instruction period. Those who do not show significant improvement will be reviewed by the Promotions Committee, which will formulate a plan for each student.

At the close of each academic year, the Promotions Committee, composed of chairmen of departments, recommends to the dean which students have achieved the objectives of the year and are qualified for either promotion or graduation. The Promotions Committee is charged to give careful individual attention to all aspects of stu-

dent achievement, effectiveness, behavior, and attitude. The committee is charged not to promote any student who has failed to meet the requirements of the preceding year, or who appears unfit for the practice of medicine. When the committee determines by majority vote that a student will not be promoted, it then recommends to the dean remedial activities or dismissal in instances where no remedy is perceived. The dean reviews the recommendations and promptly notifies students that they have been promoted, must repeat a year, or have been dismissed. A student repeating the year is expected to show significant improvement. The Promotions Committee will also meet each December to review the status of all senior students, all third-year M.D./Ph.D. candidates, and any third-year candidates for three-year graduation. Furthermore, the committee will review any other students in serious academic difficulty and may, at this meeting, choose to take final action on such students, including dismissal.

An appeals committee of three senior faculty will hear appeals of dismissals when such are filed in writing within 14 days of the student's notice of dismissal. A student may also appeal a decision to repeat a year, but will be reviewed by the Appeals Committee only when it is found that the student will present information not previously available to the Promotions Committee. A student appealing has the right to appear before the Appeals Committee and to have an advisor participate. The dean of the School of Medicine will act upon the recommendation of the Appeals Committee within fourteen days of receipt of the committee's recommendation.

### **WITHDRAWAL**

A student may not leave school prior to completion of an academic year unless granted leave of absence by the dean. A student who leaves without such permission or who fails to return by the end of the granted term of leave is considered dismissed from the class and may return only by applying for possible readmission. Where such a student has demonstrated any academic deficiency, the application is presented to the Promotions Committee. Otherwise, the Admissions Committee will determine whether to readmit the applicant.

### **REQUIREMENTS FOR GRADUATION**

The degree of Doctor of Medicine will be conferred by Virginia Commonwealth University upon candidates who, in the opinion of the medical faculty, have

1. Attained the school's educational objectives as evidenced by satisfactory completion of prescribed courses and examinations, by proven clinical skills and responsibilities, and by ethical standards;
2. Attended the School of Medicine for a minimum of two years, one of which must be an academic year of clinical rotations; and
3. Discharged all financial obligations to the University.

It is the policy of the School of Medicine that candidates must be present at commencement exercises unless excused by the dean.

### **STUDENT PARTICIPATION**

The dean and faculty solicit the advice of students in conducting the affairs of the medical school. Student officers elected by their classes meet for dinner quarterly with deans and curriculum coordinators. At these meetings, each phase of the curriculum and any other matters of concern to students are discussed in detail. Each class also elects representatives to the faculty committees which design its curriculum. Students are selected by the dean and the faculty to serve on the Admissions Committee, on faculty tenure committees, and on committees to recommend appointment of deans. A continuing effort is made to improve methods for student evaluation of teaching technique. All students are welcome to visit the deans, teachers, and faculty advisors at any time to volunteer opinions or seek explanations of procedures employed by the school.

### **STUDENT FELLOWSHIPS**

Opportunities are available for study and investigation under the tutelage of faculty members in their laboratories during the summer vacation and as an extracurricular activity during the school year.

These studies are supported by the A. D. Williams fellowship endowment with selections made by the A. D. Williams Committee on the recommendations of the A. D. Williams Research Advisory Committee. Selections for project grant funds are made by the principal investigators.

The Robert C. Bryan Summer Fellowship in Pathology was given by Mr. Jonathan Bryan in memory of his father.

The Arthur T. Lyman Fellowship in Pathology is awarded to an outstanding student participating in the summer fellowship program. This represents a gift from Mrs. Fairfield Goodale in memory of her father.

## FINANCIAL ASSISTANCE

A brief description of financial aid based on demonstrated need is contained in Part I of this bulletin. Financial need-based aid programs available to medical students include Health Professions Student Loan, Commonwealth of Virginia Medical Scholarship, Norfolk Foundation Scholarship, Lincoln/Lane Foundation Scholarship, and various institutional loans and grants.

Information on the Commonwealth of Virginia Medical Scholarship and the other programs may be obtained from the University Enrollment Services/Financial Aid officer in the Office of the Dean, School of Medicine.

## U.S. Armed Forces Scholarships

The Army, Navy, or Air Force provides up to four years of paid tuition and fees, book and supplies allowance, and a stipend in exchange for military service after graduation. Normally, the recipient serves one year on active duty for each year of scholarship, with a minimum service of three years. Additional information may be obtained from local armed services recruiting offices.

## HONORS AND PRIZES

Student research and honors day is held in May. Begun by the American Medical Student Association, it is now a joint effort of that organization, the Alpha Omega Alpha honorary scholarship society, and the medical school. Honors and prizes in the medical school include:

**Alpha Omega Alpha.** The Brown-Sequard Chapter, established at MCV in 1940, elects to membership each year senior and junior students who have demonstrated outstanding academic achievement as evidenced by cumulative ranking in the upper one-fourth of the class. Membership is limited to a maximum of one sixth of each class.

**Sigma Xi.** Seniors of high scholastic achievement who show promise of success in research may be elected to associate membership in the VCU chapter of this national honorary scientific society.

**Sigma Zeta.** Outstanding members of the junior and senior classes of the Schools of Medicine, Dentistry, Pharmacy, and Nursing are elected to this honorary scientific society.

**L. Beverly Chaney Scholarship.** For responsible leadership during the first three years of medical school, a senior scholarship of \$2,500 from the Joseph Collins Foundation in memory of its trustee, Dr. Chaney, who graduated from the School of Medicine in 1918.

**The Upjohn Prize.** A plaque and \$150 awarded by the Upjohn Company to the senior student chosen by his classmates as the most outstanding in scholarship and leadership.

**William Branch Porter Stethoscope.** A silver replica of the stethoscope given by Sir Thomas Lewis to Dr. Porter, professor of medicine from 1928 to 1956, awarded to a senior student for outstanding achievement in internal medicine.

**Isaac A. Bigger Medal.** A medal awarded annually to a surgical resident for integrity, leadership, teaching, and clinical ability, in memory of Dr. Bigger, professor of surgery from 1930 to 1955.

**Lee E. Sutton, Jr. Prize.** Awarded to a senior student for excellence in pediatrics, in memory of Dr. Sutton, professor of pediatrics from 1938 to 1958, and dean from 1929 to 1942.

**Robert C. Bryan Prize.** For excellence in sophomore pathology, an annual award of \$50 in memory of Dr. Bryan, professor of urology from 1917 to 1934.

**Aubrey H. Strauss Prize.** For excellence in sophomore microbiology, an annual award of \$75 in honor of Dr. Strauss, assistant professor of microbiology from 1909 to 1924.

**Hjalmar L. Osterud Prize.** For excellence in freshman anatomy, \$75 awarded annually to a medical or dental student in memory of Dr. Osterud, professor of anatomy from 1922 to 1953.

**Outstanding Pathology Graduate Student.** A prize of \$125, awarded to the pathology graduate student showing the most promise of success in research.

**A. D. Williams Award.** Awards are made to a student in each of the first three years of medical school for outstanding academic achievement.

**Ciba Award.** A set of Netter Atlas volumes awarded to the sophomore student who has demonstrated the most beneficial extracurricular activity within the community.

**Henry Clay Smith Scholarship.** Given in memory of Dr. Henry Clay Smith, a graduate of MCV, to two M-III students most likely to emulate Dr. Smith by careers of service to the health needs of rural Virginia. Selections made by the Department of Family Practice.

**Medical Society of Virginia.** Given by the Medical Society of Virginia on the basis of financial need and academic excellence.

**Southern Medical Association.** Given by the Southern Medical Association to two M-I students on the basis of financial need and academic excellence.

**Richard Kirkland Scholarship.** Given by the Richard Kirkland Scholarship Fund to an M-II student on the basis of financial need and academic excellence.

**A. H. Robins Scholarship.** Given by the A. H. Robins Company on the basis of financial need and academic excellence.

**Hoak Scholarship.** Given on the basis of financial need and academic excellence.

**Sidney B. Barham Scholarship.** Given in memory of Dr. Sidney B. Barham, Sr. Used for scholarships to deserving medical students elected by the college administration.

**Merck Manual.** Current edition of the Merck Manual donated by the Merck Company. Four awards given.

**Mosby Award.** Student receives a certificate from the Mosby Book Company and selects ONE book from the Mosby catalog. Three awards given.

**Lange Award.** First-, second-, and third-year students receive a selection card and choose TWO books from the offered selection. Six awards given. Fourth-year students receive a certificate and a selection card to choose FOUR books from the offered selection. Two awards given.

**Dean's Award.** \$50.00 book selection from the MCV Campus Bookstore.

**Elizabeth Joanne Harbison Award.** Given for performance during the M-III pediatric clerk ship and M-IV pediatric electives. This award is restricted to students entering the field of pediatrics.

**Eric C. Schelin Award.** For outstanding work in the OB/GYN department based on academic and clinical achievement. The department provides a monetary award and the name inscribed on a plaque in the Department of Obstetrics and Gynecology.

**Harry Walker Award.** Given to a student for outstanding performance on the M-II Introduction to Clinical Medicine course. This monetary award is selected by a committee from the Alumni Association.

**A. J. and Lee Pardoll Endowed Scholarship.** This endowed scholarship given by Peter M. Pardoll, M.D., 1971, in memory of his parents, provides a \$1,000 scholarship award for a student entering the second year of study and is based on financial need and academic achievement. Priority is given first to students from Florida and then to non-Virginia residents.

**A. Jarrell Raper Memorial Scholarship Fund.** Given in memory of Dr. A. Jarrell Raper, a graduate of MCV, to minority students on the basis of financial need.

**Elise H. and Wesley Wright, Jr. Endowed Scholarship.** Given to a Princeton University graduate on the basis of financial need.

**W. Donald and Anne Tucker Moore Scholarship.** Given to second-year student from North Carolina on the basis of financial need and academic excellence.

**Seymour Schotz Scholarship.** Given to second-year student on the basis of financial need.

**Susan Mellette Scholarship and Fellowship Fund.** Given to students who have demonstrated interest and achievement in oncology and on the basis of academic credentials.

**Paul Dunn Scholarship.** Given to second-year student on the basis of financial need.

**Kinloch Nelson Scholarship Award.** Given on the basis of demonstrated leadership ability, academic accomplishment, and financial need.

**Seymour Schotz Memorial Scholarship Fund.** Given in memory of Dr. Seymour Schotz, a graduate of MCV, on the basis of financial need.

## Graduate Degree Programs (M.P.H., M.S., and Ph.D.)

The School of Medicine offers graduate programs leading to the Master of Public Health degree, the Master of Science degree in Biomedical Engineering, and Master of Science and Doctor of Philosophy in Anatomy, Biochemistry and Molecular Biophysics, Human Genetics, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, and Physiology. In addition, a program leading to the combined degrees of M.D./Ph.D. or D.D.S./Ph.D. is offered which provides superior preparation for a research career in academic medicine or dentistry.

Additional information on the School of Medicine's graduate degree programs is provided in the Virginia Commonwealth University *Graduate Bulletin*.

## MASTER OF PUBLIC HEALTH PROGRAM

The graduate program in public health is offered through the Department of Preventive Medicine and Community Health of the School of Medicine and leads to the Master of Public Health degree. The M.P.H. program is closely linked with regional and state public health agencies to enhance the student's appreciation and understanding of applying public health principles to practice. It provides the knowledge and skills necessary for a broad range of innovative leadership positions in academia, public health policy



areas, private industry, and local, national, and international health organizations.

Study for the M.P.H. degree may be undertaken on a full- or part-time basis and is designed to accommodate students from a variety of academic and professional backgrounds. Generally, students are: recent baccalaureate degree graduates who have a strong interest in a public health career; physicians, dentists, nurses, and other health professions graduate students who wish to link advanced study in public health with another field; or health workers seeking career development or desiring advanced studies.

Each student in the program works initially with an advisor to determine the courses and practicum best suited to the individual's background, interests, and experience. The program emphasizes an interdisciplinary approach while offering several areas of electives within the general field: epidemiology, community health services, preventive medicine, occupational health, study of populations at risk, risk management, nutrition, and international health and public health nursing. Other elective areas are scheduled to be added. In addition to formal course work, the curriculum encourages personal involvement in a major health program under the supervision of faculty and community professionals. Graduates of the M.P.H. program will be able to identify, analyze, and interpret factors necessary for diagnosis in community health; develop, implement, and evaluate community health programs; apply program-solving principles and independent thinking to today's complex health-care system; analyze the health services system in the context of interacting social, economic, and political environments; and apply specific skills and knowledge to surveillance of disease.

Information on admission and course requirements and application forms for admission may be obtained by writing to the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051, or to the Director of the M.P.H. Program, Department of Preventive Medicine and Community Health, School of Medicine, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980212, Richmond, VA 23298-0212.

## COURSES OF INSTRUCTION (MPH)

Nonmajor courses listed above such as NUR (Nursing), HAD (Health Administration) and BIS (Biostatistics) courses are described elsewhere in this bulletin; please refer to the index.

**600 (001) Introduction to Public Health.** Semester course; 3 lecture hours. 3 credits. Described the public health system in the United States. Explores disease prevention and philosophy and foundations of public health management, economics, law, ethics and education. Examines the use of epidemiology and statistics to determine personal, environmental, and occupational health problems.

**603 (001) Public Health Policy and Politics.** Semester course; 3 lecture hours. 3 credits. Provides an understanding of the public health policy development process, the influence of politics and special interest groups on this process, and current governmental policies for the provision of major public health services. The legislative process is a major focus of the course.

**604 (001) Principles of Occupational and Environmental Health.** Semester course; 3 lecture hours. 3 credits. Basic principles of occupational and environmental health are presented, with emphasis on biological, chemical, and physical factors that influence human health. Current workplace and public health safety and regulatory issues and emphasized.

**605 (001) Study of Populations at Risk.** Semester course; 3 lecture hours. 3 credits. Examines the whys and hows of determining major population health risks. Focuses on the design of a research project to determine the risks to health of an identified population using sampling and survey techniques, data collection, and data analysis.

**615 (E 004) Minority Issues in Public Health.** Semester course; 3 lecture hours. 3 credits. A survey of a number of crucial psychological, social, cultural, demographic, economic, biological, humanistic, and other factors which influence disease susceptibility, the distribution of disease and disabilities, the quality and accessibility of the health care, and other health related conditions among minorities and underserved populations in the United States. Through lectures and dialogue, expert panels, student presentation, readings, and other assignments, students are expected to become acquainted with theory and research findings from the behavioral sciences, behavioral epidemiology, public health, and other sources which are likely to contribute to: (1) a greater comprehension of the magnitude and complexities of health problems found disproportionately among minorities and the underserved and (2) advancements in our capacity to successfully confront these public health issues.

**691 Survey of Public Health Behavior.** Semester course; 3 lecture hours. 3 credits. An overview of psychosocial, cultural, demographic, economic and other related behavioral factors, associated with health, morbidity, disability, and mortality, with special reference to behavior relevant to the public health domain. Areas covered will include selected theory and research findings from the behavioral sciences and behavioral epidemiology, research methods and techniques, and evaluation methods for behavioral interventions in public health.

**691 (001) International Health.** Semester course; 3 lecture hours. 3 credits. Provides an overview of and/or introduction to international health. Focus is on the relationship between external factors and the health populations.

**691 (002) Intentional Injury.** Semester course; 3 lecture hours. 3 credits. Examines the number, distribution, and impact of intentional injuries in the United States, as well as

some of the crucial psychological, social, cultural, demographic, economic, biological, and other factors associated with their cause, control, and prevention. Through lectures and dialogue, expert panels, student presentations, reading, and other assignments, students are expected to become acquainted with theory and research findings from the behavioral sciences, behavioral epidemiology, public health, and other sources which are likely to contribute to: (1) a greater comprehension of the magnitude and complexities of violence and intentional injuries in American life and (2) advancements in our capacity to successfully confront this epidemic with public health and related measures.

**691 (003) Public Health Education.** Semester course; 3 lecture hours. 3 credits. Provides the student with an examination of theory and practice of public health education. This examination represents an overview of selected topics that are congruent to the Responsibilities and Competencies for Entry-Level Health Educators. Specifically course content will be centered around assessing individual and community needs for health education programs, coordinating provision of health education services, acting as a resource person in health education, and communicating health and health education needs, concerns, and resources.

**691 (V-003) Special Topics (Nutrition Research).** Semester course. 2 lecture hours. 2 credits. This course consists of weekly discussions of selected topics in nutrition led by the faculty plus an assigned paper and presentation at the end of the semester by each student. The topics to be presented by the faculty include: Food Safety, The Aspartame Example; Diet, Nutrition and Cancer; Exercise and Nutrition; The Vitamin A Story; The FDA and Food Safety; Nutrition and GI Motility; Nutrition Assessment Techniques; Nutrition and the Critically Ill; The Vitamin D Story; Cholesterol Nutrition; Nutrition and Wound Healing; How Salty Taste Works; Stable Isotopes in Nutrition Studies.

**691 (001) Public Health Law.** Semester course; 3 lecture hours. 3 credits. Provides the student with the structure of the legal system and statutes and regulations governing state and local health departments. This course examines the federal public health laws, medical malpractice, privacy and confidentiality issues, mental health laws, abortion and sterilization, patients rights, emergency medical care law, human experimentation, rights of the terminally ill, AIDS law, occupational and environmental health law, and health planning and reimbursement law.

**691 (002) Public Health Practicum.** Semester course; 9 clinical hours. 3 credits. Focuses on practice and research roles within public health. Provides students the opportunity to work collaboratively with state and local public health agencies and professionals in meeting specific population needs. Community health and issues pertaining to populations at risk are primary areas of interest for students enrolled.

## Master of Science and Doctor of Philosophy Programs

### MCV CAMPUS GRADUATE COMMITTEE

The graduate programs leading to the degrees of Master of Science and Doctor of Philosophy in the School of Medicine and the School of Phar-

macy at the Medical College of Virginia Campus of Virginia Commonwealth University are under the supervision of the MCV Campus Graduate Committee, which is composed of one faculty member from each department offering graduate degrees. In addition, nonvoting members representing the College of Humanities and Sciences and the Schools of Dentistry, Nursing, and Allied Health Professions meet with the committee. One member is chosen by the committee to serve as its convener, and the dean, School of Medicine, serves as chair of the MCV Campus Graduate Committee.

The graduate program directors currently on the committee are Dr. George Leichnetz, anatomy; Dr. Richard Franson, biochemistry and molecular biophysics; Dr. Daijin Ko, Biostatistics; Dr. Jennifer Wayne, biomedical engineering program; Dr. Linda Corey, human genetics; Dr. Marvin Boots, medicinal chemistry; Dr. John Tew, microbiology and immunology; Dr. Joy Ware, pathology; Dr. Albert Munson, pharmacology and toxicology; Dr. Wesley J. Poyner, pharmacy and pharmaceuticals; and Dr. James Poland, physiology.

### TERMINATION OF ENROLLMENT

The University reserves the right to terminate the enrollment of any student for unlawful, disorderly, or immoral conduct or for persistent failure to fulfill the purposes for which he or she was matriculated.

A student enrolled in a graduate program under the supervision of the MCV Campus Graduate Committee may be dismissed from the school in which he is enrolled for failure to meet academic requirements prescribed by his school or failure to exhibit the attitudes and skills deemed necessary to function within his chosen scientific discipline.

Any action by a graduate student in a program under the supervision of the MCV Campus Graduate Committee considered to be unprofessional conduct shall constitute cause for disciplinary action.

Unprofessional conduct includes, but is not limited to:

1. Fraud or deceit in gaining admission to the University, i.e. false or obviously misleading representations on the admission application.
2. An act that violates the established legal standards regarding conduct of one person towards society, i.e. stealing, lying, cheating and slander.
3. Conviction of a felony involving moral turpitude.
4. Plagiarism or other scientific misconduct.

**REQUIREMENTS FOR ADMISSION**

1. The purpose of admission requirements and procedures is to encourage applications from competent students and to ensure selection of those whose motivation, ability, education, and character qualify them to pursue successfully graduate study in preparation for a scientific career.
2. The following credentials constitute an application and should be sent to the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051.
  - a. Application for admission on a form furnished to the applicant on request. A fee in the form of a check or money order (payable to VCU), must accompany the application. The fee cannot be returned nor credited toward tuition payment.
  - b. Official transcripts of all undergraduate and graduate work sent directly from the college or university registrars to the School of Graduate Studies.
  - c. Letters of recommendation from three present or former teachers or others believed by the applicant to be qualified to evaluate fitness to engage in graduate study for the degree in the field of choice.
  - d. A personal letter from the applicant summarizing his motivation, education, and aims in pursuing graduate study.
  - e. Verbal, quantitative, and analytical portions of the Graduate Record Examination are required. Advanced tests (biology, chemistry, physics, or mathematics) are recommended where appropriate. The Medical College Admission Test or Dental Aptitude Test is acceptable in lieu of the Graduate Record Examination. For information on the GRE examination, contact the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23298-3051; or the Office of Student Services, School of Education, Virginia Commonwealth University, P.O. Box 842020, Richmond, VA 23284-2020; or Educational Testing Service, Box 955, Princeton, NJ 08540.
  - f. International applicants who do not use English as their natural language must have a TOEFL score greater than 550—see section on international students in Part I of this bulletin.
3. Acceptance of an applicant is based upon the recommendation of the chair of the major department.

**REGISTRATION**

While most students register for the first semester beginning in August, arrangements may be made to initiate graduate work at other times during the academic year.

**Scholarships, Assistantships, and Fellowships**

A number of state or federal teaching assistantships, scholarships, or fellowships are available including the A.D. Williams fellowships (college endowment). The Daniel T. Watts Distinguished Fellowship is awarded to students with exceptional academic credentials.

A brief description of financial aid based on demonstrated need is contained in Part I of this bulletin. Need-based aid programs include National Direct Student loan, college work study, and institutional loans.

**THE STUDENT'S ADVISOR AND ADVISORY COMMITTEE**

1. Each student shall have an advisor and an advisory committee.
2. Appointment and duties of the advisor:
  - a. The initial advisor will be the director of the graduate program of the student's department or his/her designee.
  - b. A permanent advisor shall be appointed from the graduate faculty by the Chair, MCV Campus Graduate Committee upon recommendation of the chair of the student's major department. Appointment should be made no later than the end of the second semester after matriculation. A change in advisor may be made by the chair, MCV Campus Graduate Committee upon recommendation of the chair of the major department.
  - c. The advisor shall be chair of the student's advisory committee.
  - d. The advisor shall, with the student's advisory committee, have responsibility for guiding the student's academic program.
  - e. The advisor shall work out a plan of study with the student.
  - f. The advisor shall supervise the student's research work and thesis preparation and shall be one of the examiners of the thesis.
  - g. At the close of each academic year, the advisor shall submit to the chair, MCV Campus Graduate Committee a statement covering the progress of the student and recommendations as to whether the student's graduate studies shall be continued.

3. Appointment and duties of the student's advisory committee:

- a. The student's advisory committee shall be appointed six months prior to the comprehensive examinations by the chair, MCV Campus Graduate Committee upon recommendation of the student's advisor and after the recommendation of the chair of the major department. The composition of the advisory committee shall be such that all significant areas of the student's course work are represented. For the purpose of examinations and thesis evaluation and because of special knowledge and distinction in the field of the candidate's work, an additional member who may be from a different institution may be appointed to the student's advisory committee by the chair, MCV Campus Graduate Committee. Changes in the membership of the committee are made in the same way.

- (i) The committee for the Ph.D. candidate shall consist of a minimum of five members as follows: the student's advisor; two other members of the graduate faculty of the department in which major work is to be taken; and at least two other representatives of the graduate faculty outside the major department, where feasible, from two different departments.\*

- (ii) The committee for the M.S. candidate shall consist of a minimum of three members as follows: the student's advisor, one other member of the graduate faculty of the department in which major work is to be taken, and one representative of the graduate faculty outside the major department.\*

- b. The student's advisory committee shall work with the student's advisor in guiding the student's graduate program. The student's advisory committee shall work with the student's advisor in guiding the student's graduate program and shall meet at least annually.

- c. The student's advisory committee shall recommend and approve a degree program (including foreign language if ap-

plicable) for the student as soon as practical. The proposed M.S. program should be filed with the chair, MCV Campus Graduate Committee no later than the beginning of the third semester of study, and for the Ph.D. degree, six months prior to the comprehensive examinations. In approving a foreign language, the student's advisory committee is guided by the importance of the language in the scientific literature of the student's major subject.

- d. The student's advisory committee shall conduct the oral comprehensive and final examinations.

## GENERAL REQUIREMENTS FOR GRADUATE DEGREES

1. All full-time graduate students are expected to register for a minimum of 15 hours of graduate credit per semester and six semester hours during the summer. This requirement includes research. As an example, when students are registered for ten credits in formal courses, they are expected to undertake five credits of research under their advisors or other approved faculty members. One semester hour registration is rarely permitted for graduate students on campus and only then in exceptional circumstances with prior permission.
2. Students may not take the comprehensive examination for the Ph.D. degree if their overall grade point average is less than 2.5 or if the grade-point average for courses within the major department is below 3.0. Students may not take final oral examination for the M.S. or Ph.D. degree if their overall grade-point average is below 3.0. Research credits shall not be counted in computing this average and shall be graded as S—satisfactory, U—unsatisfactory, or F—fail. Other grade interpretations are described in Part I of this bulletin.
3. All cases of unsatisfactory student performance, including any grade of "D" or "F," or failure to pass written or oral comprehensive examinations or final examinations require approval of the MCV Campus Graduate Committee to permit students to continue. A student who has a cumulative grade-point average of 2.5 or less during any semester must successfully petition the MCV Campus Graduate Committee to remain in the graduate program. The student may also lose financial aid.

\*A faculty member in the School of Dentistry may be appointed to a student's committee in lieu of a graduate faculty member if approved by the MCV Campus Graduate Committee.

4. Copies of the thesis or dissertation (as required), prepared according to the standards approved by the MCV Campus Graduate Committee, shall be sent to members of the student's advisory committee three weeks or more before the date of the defense of thesis. These copies are to be submitted in temporary binders. Following acceptance of the thesis by the committee, the student must submit a copy of the thesis and a request for scheduling of the final examination to the chair, MCV Campus Graduate Committee. After passing the final examination, it shall be the responsibility of the candidate to present to the chair, MCV Campus Graduate Committee's office the minimum required number of copies (three for M.S.; four for Ph.D.) in final form suitable for binding. In consultation with the office staff, the candidate shall be responsible for binding and processing of the thesis through University Library Services and for payment of all charges for these services.
5. A degree is granted only after all requirements have been fulfilled, including payment of all fees to the University, and after submission of the copies of the thesis for binding. Degrees are not granted in absentia unless specific written request is made to and permission is made by the dean of the school in which the student is enrolled.

### MASTER OF SCIENCE

1. Advanced graduate study leading to the Master of Science degree is offered in the Departments of Anatomy, Biochemistry and Molecular Biophysics, Biostatistics, Human Genetics, including a track in genetic counseling, Medicinal Chemistry, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, Pharmacy and Pharmaceuticals, Physiology, and the Program in Biomedical Engineering.
2. A minimum of 24 semester hours is required, exclusive of research credits. In practice, it is found that two years of study usually are necessary to complete the requirements. A time limit of five calendar years, beginning at the time of first registration, is placed on work to be credited toward the Master of Science degree. Generally, a maximum of one third of the hours required for a master's degree may be transferred from another VCU program or outside *institution* and applied toward the degree upon recommendation of the student's advisory

sory committee with concurrence by the chair of the MCV Campus Graduate Committee.

3. Each department, at its own discretion, may stipulate one foreign language requirement for the master's degree. It is strongly recommended that the student satisfy the foreign language requirement as soon as possible after beginning the program. Students must do so at least two months before submission of the thesis.
4. Each student must conduct a substantial original investigation under the supervision of the advisor and prepare a thesis reporting the results of this research and analyzing its significance in relation to existing scientific knowledge. This study is reported in a thesis, prepared in acceptable form and style. On approval of the thesis by the advisor, the student submits a copy to each member of the advisory committee.
5. The thesis is examined by the student's advisory committee members, who shall decide upon its acceptability. The committee members may confer with one another before making their decision. Each committee member shall report to the chair, MCV Campus Graduate Committee, through the student's advisor, when the thesis is acceptable for defense. The thesis is approved only if accepted unanimously.
6. On approval of the thesis, the student appears for a final oral examination administered by the student's advisory committee. The chair, MCV Campus Graduate Committee, or an appointee, serves as chair of the examination committee. The final examination shall be open to the faculty, and its time and place (together with the candidate's name, department, and title of thesis) shall be announced at least ten working days in advance.
7. The final examination of an M.S. candidate includes the subject matter of course work as well as the thesis. A favorable vote, with no more than one negative vote, is required for the candidate to pass the examination. Only members of the student's advisory committee and the examiner appointed by the chair, MCV Campus Graduate Committee shall vote. No examiner may abstain from voting. A thesis is not required for completion of the genetic counseling track in the Department of Human Genetics. In lieu of the thesis, students in the track are required to successfully pass comprehensive oral and written examinations.

## DOCTOR OF PHILOSOPHY

1. Advanced graduate study leading to a Doctor of Philosophy degree is offered in the Departments of Anatomy, Biochemistry and Molecular Biophysics, Biomedical Engineering, Biostatistics, Human Genetics, Medicinal Chemistry, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, Pharmacy and Pharmaceuticals, and Physiology.
2. At least two years in residence are required for entering students holding the M.S., M.D., or D.D.S. degrees and at least three years for those entering with the baccalaureate degree only. A time limit of seven calendar years, beginning at the time of first registration, is placed on work to be credited towards the Doctor of Philosophy degree.

### Admission to Candidacy

Before admission to candidacy for the doctorate, the student must have (1) completed required course work, (2) successfully completed the comprehensive examinations, and (3) fulfilled all additional departmental requirements. Students are admitted to candidacy by the chair, MCV Campus Graduate Committee, upon recommendation of the advisors and advisory committee with the approval of the chair of the major department.

### Comprehensive Examinations

1. Upon satisfactory completion of all required, formal course work, the student takes written and oral comprehensive examinations. The written examination is administered by the student's major department. The student's advisory committee may require a minor field of study, in which case the student will also take a written comprehensive examination given by that department. *In the event of failure in the written comprehensive examination in the major or minor department, the student, with the approval of the MCV Campus Graduate Committee, may be permitted to repeat the written examination in the department in which the failure occurred.*
2. After successfully passing the written examination(s), the student will take the oral portion within one month. This examination is conducted by the student's advisory committee. A favorable vote of the advisory committee with no more than one negative vote (all members being required to vote) shall be required to pass the oral

portion of the comprehensive examination. The chair, MCV Campus Graduate Committee or a faculty member representing him or her will chair the oral examinations and will cast a vote.

3. If a student passes the written comprehensive examination but fails the oral part, the student may be reexamined only in the oral part with the approval of the MCV Campus Graduate Committee.
4. The oral comprehensive examination is open to all members of the faculty. Faculty members in attendance may ask questions of the candidate, but their questions shall not be presented until after the advisory committee has completed its questions. Faculty members other than those on the advisory committee shall not vote on the success or failure of the candidate. The time and place of the examinations shall be posted at least ten working days in advance.
5. The examination must be successfully completed at least six months before submission of the dissertation.

### Dissertation Research

1. The student must conduct a substantial original investigation under the supervision of the advisor and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge.
2. When the dissertation has been completed, copies in acceptable form and style are submitted to the members of the advisory committee. The committee members decide upon the acceptability of the candidate's thesis. A favorable unanimous vote is required to approve the dissertation, and all examiners are required to vote.
3. If the advisory committee accepts the dissertation for defense, the candidate appears before them for a final oral examination. This examination is open to all members of the faculty. The final oral examination will be limited to the subject of the candidate's dissertation and related matters. A favorable vote of the candidate's advisory committee and no more than one negative vote shall be required for passing the final oral examination. All committee members must vote. There shall be announcements of the candidate's name, department, and title of dissertation, together with the day, place, and hour of the final oral examination at least ten working days in advance.

### NON-DEGREE SEEKING STUDENTS

Students not admitted to a degree program must obtain permission from the instructor before being allowed to register for courses.

### SUMMER REGISTRATION

Graduate students are expected to devote ten or more weeks during the summer to full-time research. Students registered for research credit are billed at the established tuition rate.

### TRAINING AS A TEACHER

Currently, there is increased emphasis on competence as a teacher as well as investigator for faculty members of colleges, universities, and professional schools. In addition to practical experience, laboratory teaching, and lecturing, students should give consideration to courses offered by the School of Education concerning learning theory, instructional strategy, and educational technology in adult education.

A complete listing of available courses in education in the University may be found in the VCU *Graduate Bulletin* or obtained from the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, Virginia 23284-3051, (804) 828-6940.

### COMBINED M.S./PH.D. AND M.D. OR D.D.S. DEGREE PROGRAMS

Many future physicians and dentists, especially those interested in academic and research careers, need to start in-depth training in research while still in school or in residency training. This need can be effectively met by completing the requirements for the M.S. or Ph.D. degree concurrently with the study of medicine or dentistry. The MCV/VCU medical and dental curricula, with free time for elective courses and research, provide an excellent opportunity for interested students to enter a combined M.S./M.D. or D.D.S. or Ph.D./M.D. or D.D.S. program.

Admission of students regularly enrolled in the Schools of Medicine and Dentistry to this combined degree program is processed through the Admissions Offices of the Schools of Medicine and Dentistry by established procedures. The Medical College Admission Test (MCAT) or Dental Aptitude Test (DAT) is accepted in lieu of the Graduate Record Examination. Undergraduate transcripts and references are obtained from the professional school. No application fee is required as the students are already regularly enrolled in a school of the university.

The requirements for a combined professional school/graduate school degree in basic sciences

are equivalent to those required of students seeking a graduate degree alone and are determined by the individual department. One of the advisory committee members is the student's professional school advisor.

The minimum graduate residence requirement is one year for the M.S. and two years for the Ph.D. degree. Twenty-four weeks of graduate work (two summers) will be considered equivalent to one year of residence. A time limit of the five calendar years for the M.S. and seven calendar years for the Ph.D. degree, beginning at the time of first registration in the graduate school, applies to work to be credited toward degrees for students in combined programs.

### INTERDISCIPLINARY PH.D. PROGRAMS

The Schools of Medicine and Allied Health Professions offer Ph.D. programs in neurophysiological physical therapy and in anatomy-orthopedic physical therapy. These research degrees are planned primarily as physical therapy faculty development programs; other needs may be met for individual students. Interested physical therapists should contact the Departments of Anatomy or Physiology for details.

The School of Pharmacy offers a combined Doctor of Pharmacy and Ph.D. program in the program in pharmaceuticals and pharmacy administration. Interested pharmacists should contact the Department of Pharmacy and Pharmaceutics.

### COURSES OF INSTRUCTION

#### DEPARTMENT OF ANATOMY (ANA)

**301 Head and Neck Anatomy (Dental Hygiene).** Semester course; 3 lecture and 4 laboratory hours. 5 credits. An overview of head and neck anatomy with emphasis on oral structures.

**302 Microscopic Anatomy (Dental Hygiene).** Semester course; 2 lecture hours and 2 laboratory hours. 3 credits. A lecture course in the microscopic anatomy of general body tissues and of the oral cavity.

**401 Principles of Human Anatomy (Primarily for pharmacy students).** Semester course; 3 lecture and 3 laboratory hours. 4.5 credits. The structure of the human body is surveyed by organ systems which are studied at several levels of organization. Emphasis is placed on basic concepts and their application to various body components.

**403 Embryology (Physical Therapy).** Semester course; 1 lecture hour. 1 credit. A study of the development of the form of the human body emphasizing structural and developmental relationships between the musculoskeletal and nervous system.

**501 Gross Anatomy (Dentistry).** Semester course; 5.5 lecture and 8 laboratory hours. 9.5 credits. A systematic dissection and study of the human body with clinical correlation and emphasis on the head and neck.

**502 Microscopic Anatomy (Dentistry).** Semester course; 3 lecture and 6 laboratory hours. 6 credits. A study of the normal tissues and organs of the human body at the microscope level, with emphasis on the histological organization and development of the oral cavity.

**503 Neuroanatomy (Dentistry).** Semester course; 1.5 lecture hours. 1.5 credits. This course provides the student with a broad exposure to the field of neuroanatomy. The structure and connections of the brain and spinal cord are stressed to prepare the student for dealing with physiological, pharmacological, and clinical aspects presented in other courses.

**525 Advanced Functional Anatomy (Occupational Therapy).** 3 lecture hours and 4 lab hours. 5 credits. Prerequisites: BIO 205 or equivalent and permission of the instructor. A study of the anatomy and kinesiology of the human body using prosected specimens and the dissected cadaver. Emphasis is placed on the study of the extremities, particularly the hand.

**529 Advanced Functional Neuroanatomy (Occupational Therapy).** 2 lecture hours and 2 lab hours. 3 credits. Prerequisites: ANA 525 and permission of the instructor. A study of the morphological and functional aspects of the central and peripheral nervous systems of the human body with particular emphasis on motor activity.

**607 Embryology.** Semester course; 3 lecture hours. 3 credits. A study of basic mechanisms and salient events of normal human development with emphasis on the ontogeny of organ systems.

**609 Gross Anatomy.** Semester course; 4 lecture and 10 laboratory hours. 9 credits. A dissection and macroscopic study of the human body with clinical correlation.

**610 Neuroanatomy.** Semester course; 4 lecture and 4 laboratory hours. 6 credits. A study of the structure, connections, and functions of the central nervous system. Laboratory sessions complement lecture presentations emphasizing light microscopic and ultrastructural neurohistology, gross and sectional anatomy of the brain, and tracing of functionally-related CNS connections.

**611 Histology.** Semester course; 3 lecture and 6 laboratory hours. 6 credits. A study of the basic light and electron microscopic structure of cells, tissues, and organs. Emphasis on correlating structure with function.

**614 Cytology.** 2 lecture hours. 2 credits. II. A topical approach to current areas of interest in mammalian cell and molecular biology.

**613 Advanced Studies in Anatomy.** Semester course; 1 -6 credits. An in-depth course in specific areas of anatomy, histology, gross anatomy, and neuroanatomy.

**616 Techniques in Electron Microscopy.** Semester course; 1-5 hours. 1-5 credits. Teaches basic and advanced techniques and theories of ultramicrotomy and electron micrography as related to transmission and scanning electron microscopy.

**690 Anatomy Research Seminar.** Semester course; 1 lecture hour. 1 credit. A course consisting of faculty and student-led seminars presenting current research in neurobiology, immunobiology, and reproductive biology.

**691 Special Topics in Anatomy.** Semester course; 1-4 credits. Lectures, seminars, tutorial sessions, and/or library research assignments in selected areas of advanced study not available in other graduate level anatomy courses, or as concentrated emphasis on a particular area of anatomical research.

**697 Directed Research in Anatomy.** 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOPHYSICS (BIC)

**402 Biochemistry (Pharmacy).** Semester course; 4 lecture and 3 laboratory hours. 5 credits. Prerequisite: CHE 301 302 or equivalent. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as a part of the fundamental background of modern pharmacy.

**403 Biochemistry (Undergraduate).** Semester course; 3 lecture hours. 3 credits. Prerequisite: CHE 301-302 or equivalents with permission of instructor. A presentation of structural biochemistry, enzymology, biophysical techniques, bioenergetics, and an introduction to intermediary metabolism.

**404 Biochemistry (Undergraduate).** Semester course; 3 lecture hours. 3 credits. Prerequisite: CHE 301-302 or equivalents with permission of instructor. A presentation of intermediary metabolism, regulation, molecular genetics, biochemistry of nutrition, and selected topics of physiological/medical significance.

**501 Biochemistry (Dentistry).** Semester course; 4 lecture hours plus clinical correlations. 5 credits. Prerequisites: organic chemistry, three credits of physical chemistry, or permission of instructor. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as part of the fundamental background of modern dentistry. Four clinical correlation workshops complement the lecture presentations.

**502 Biochemistry (Medicine).** Semester course; 3 lecture hours. 3 credits. An introduction of structural biochemistry, intermediary metabolism, cell biology, and methods of biochemical analysis as part of the fundamental background of modern medicine.

**503-504/MIC 503-504 Biochemistry, Cell and Molecular Biology.** Continuous course; 5 lecture hours. 5 credits. Prerequisites: undergraduate organic and physical chemistry or permission of the instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

**505-506 Experimental Biochemistry.** Continuous course; 4 laboratory hours. 2 credits. Prerequisites or concurrent: BIC 503 or equivalent. Laboratory work, including theory and practice of advanced biochemical research methods.



**507-508 Bio-organic Chemistry.** 3 lecture hours. 3 credits. I, II. Prerequisite: permission of the instructor. Study of structure, chemistry, and mechanism of small, biologically important molecules.

**509 Biophysical Chemistry.** 3 lecture hours. 2 credits. I. Study of major physical/chemical concepts of biological organization with emphasis on self-assembly and dynamic interactions of biological structures.

**516C Human Nutrition.** 3 lecture hours. 3 credits. This off-campus survey course is designed for secondary school health and physical education, and biology teachers as well as others who wish to expand their knowledge of nutrition. The course involves core as well as current issues in Human Nutrition and primarily involves a series of interdisciplinary lecture/discussions. Topics include: description of the biochemistry and physiology of food components and nutrients; the accepted recommendations relating to health, nutrition and exercise, physical fitness and athletic performance; as well as topics related to eating disorders; growth and development; nutrition misinformation; nutrition and health issues.

**550 Basic Science Core Curriculum for Postgraduate Dental Students.** Semester course; 3 lecture hours. 3 credits. This course is designed to provide the postgraduate dental student with the educational experience in the basic science required for the successful completion of his/her specialty training program. Selected lectures in the basic science areas related to dentistry are presented and are supplemented by assigned articles.

**601 Membranes and Lipids.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '95) Prerequisite: BIC 503-504. Comprehensive presentation of important areas in biological membrane research. Key topics include techniques in the study of membrane lipids and proteins, "order" and organization in membranes, transport, receptors and cell surface antigens, physical measurements in membranes, and reconstituted systems and reconstituted systems, and signal transduction.

**602 Physical Properties of Macromolecules.** Semester course; 3 lecture hours. 3 credits. Prerequisites: BIC 503-504 and physical chemistry. Physicochemical approaches to the determination of the structure and conformation of macromolecules.

**603 Bioorganic Chemistry.** Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Study of structure, chemistry, and mechanism of small biologically important molecules.

**604 Enzymology.** Semester course; 3 lecture hours. 3 credits. Prerequisite: BIC 503-504. Physical and chemical properties and mechanisms of action of enzymes. Treatment of chemical catalysis, enzyme kinetics, and correlation of enzyme structure to mechanisms.

**605 Molecular Biology.** Semester course; 3 lecture hours. 3 credits. Prerequisite: undergraduate chemistry or biochemistry. Nucleic acid structure, genetic code, DNA replication, transcription, translation; structure and properties of self-assembling systems; viruses, ribosomes, and membranes.

**606 Biochemical Control Processes.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '92.) Prerequisite: BIC 503-504 and permission of instructor. An advanced course on aspects of control mechanisms at the molecular level.

**610 Current Trends in Biochemistry.** Semester course; 2 lecture hours. 2 credits. Prerequisite: BIC 503-504. A study and literature review of common and complex biochemical substances using recent research methodology.

**690 Biochemistry Research Seminar.** Semester course; 1 credit. Reports on recent biochemical literature and research by students and staff.

**691 Special Topics in Biochemistry.** Semester course; 1-4 credits. Lectures, tutorial studies and/or special assignments in selected areas of advanced study not available in other courses or as part of research training.

## PROGRAM IN BIOMEDICAL ENGINEERING (BME)

**502 Application of Microcomputers to Health Sciences.** 1 lecture hours and 4 laboratory hours. 3 credits. I, II. Prerequisite: permission of the instructor. This course introduces the various uses of microcomputers in health sciences. BASIC language and application systems such as databases, word processing and statistical programs as related to health science problems will be taught. Students are instructed in the use of the Digital Equipment Co. VAX Computer which is located in the Health Sciences Computer Center on the MCV Campus.

**507 Biomedical Electronics and Instrumentation.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Analog and digital electronic fundamentals in biomedical applications.

**509 Microcomputer Technology in the Biomedical Sciences.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Microcomputer applications to the acquisition and manipulation of data in the biomedical laboratory.

**511 Fundamentals of Biomechanics.** Semester course; 3 lecture hours. 3 credits. Prerequisites: calculus and ordinary differential equations (MAT 200-201, MAT 301, or equivalent). Presents basic properties of materials, describes methods of material testing, and introduces techniques for analyzing the solid and fluid mechanics of the body. Considers topics such as stress/strain relationships, particle mechanics, and force balances as well as viscous/inviscid flow, Bernoulli's Law, Poiseuille flow, and laminar/turbulent states.

**603 Biomedical Signal Processing.** Semester course; 3 lecture hours. 3 credits. Prerequisites: calculus and differential equations (MAT 301 or equivalent), including Laplace and Fourier Transforms. Explores theory and application of discrete-time signal processing techniques in biomedical data processing. Includes discrete-time signals and systems, the Discrete/Fast Fourier Transforms (DFT/FFT), digital filter design and implementation, and an introduction into processing of discrete-time random signals.

**610 Microprocessor Interfacing to Biomedical Instrumentation.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: BME 509 or permission of instructor. Principles and applications of microprocessor interfacing for biomedical instrumentation. Topics include microprocessor architecture, assembly language, programming and debuting techniques, EPROM programming, and bus structure and interfacing.

**611 Cardiovascular Dynamics.** Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: PIO 502 or 505. Analyzes and models the cardiovascular system in health and disease through studies on the properties of heart and vascular tissue, the mechanics of blood flow, and the application of engineering methods to the diagnosis and treatment of clinical abnormalities.

**612 Structural Biomechanics.** Semester course; 3 lecture hours. 3 credits. Prerequisite: BME 511. Treats mechanical functions of the human body as an engineering structure and discusses the devices used to assist and supplement these functions. Includes movement of the musculoskeletal system, joint reaction forces, stresses and strains developed within bones, function and design of orthopedic prostheses and braces, effect of vibration and impact on the body, mathematical and other models of the body.

**613 Biomaterials.** Semester course; 3 lecture hours. 3 credits. Prerequisite: undergraduate material science or permission of instructor. Considers primary and secondary factors determining the performance of materials used for implants in the human body. Includes topics on metallurgy of stainless steel, cobalt-chromium alloys, titanium alloys, biocompatibility of implant materials, mechanical and physical properties of biomaterials, corrosion of biomaterials, and medical polymers.

**615 Medical Imaging.** 3 lecture hours. 3 credits. I. Prerequisite: calculus and college physics. Covers the physical principles and techniques of medical imaging modalities such as ultrasound, x-ray, and nuclear magnetic resonance. Includes generation and detection of images, consideration of system design and qualitative image analysis.

**622 Circuit Design and Analysis.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '93.) Prerequisites: college physics, calculus. Emphasis is placed on the in-depth understanding of the analysis and design of electronic circuits. Designed to meet the needs of quantitatively oriented students.

**635 Modeling for Biomedical Engineers.** Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Applies mathematical modeling techniques to biomedical systems. Covers linear and nonlinear systems, deterministic and random systems, large systems, ecosystems, numerical techniques, graph theoretical approaches, and simulation packages. Utilizes examples of biochemical, physiological, and pharmacokinetic systems throughout.

**641 Survey of Molecular Modeling Methods.** Semester course; lecture and laboratory. 1 credit hour. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule/large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

**670 Advanced Molecular Modeling.** Theory and Practice. Semester course; lecture and laboratory. 3 credits. Prerequisite: PHC 641, BME 641 or permission of the instructor. Examines the principles and applications of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug-molecular design. Workshop sessions provide hands-on experience using state-of-the-art hardware and software for molecular modeling.

**680-681 Research Orientation.** Semester course; 4 laboratory hours. 2 credits (nondidactic course) per semester. Research rotation through BME core and selected affiliate laboratories.

**690 Biomedical Engineering Research Seminar.** Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the program seminar or special group seminar.

**691 Special Topics in Biomedical Engineering.** Semester course; 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advance study, or specialized laboratory procedures not available in other courses or as part of the research training.

**697 Directed Research in Biomedical Engineering.** 1-15 credits. Research leading to the M.S. degree or elective research projects for other students.

## DEPARTMENT OF BIostatistics (BIS)

**502 Application of Microcomputers to Health Sciences.** Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: permission of instructor. This course will introduce the various uses of microcomputers in health sciences. BASIC language and application systems such as data bases, word processing, and statistical programs as related to health science problems will be taught. Students will be instructed in the use of the Digital Equipment Company VAX computer which is located in the Academic Computer Center on the MCV Campus.

**513-514/STA 513-514 Mathematical Statistics.** Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 307 Multivariate Calculus. Probability, random variables and their properties, distributions, conditional distributions, moment generating functions, limit theorems, Neyman-Pearson and likelihood ratio criteria for testing hypotheses.

**516 Biostatistical Consulting.** Semester course; 1 lecture hour. 1 credit. The principles dealing with the basic art and concepts of consulting in biostatistics. The nonstatistical course discusses role, responsibilities of biostatisticians, relationship between clients and consultants, method of writing reports, etc.

**523/STA 523 Nonparametric Statistical Methods.** Semester course; 3 lecture hours. 3 credits. Prerequisite: any two courses of statistics or permission of instructor. *Estimation* and hypothesis testing when the form of the underlying distribution is unknown. One-, two-, and k-sample problems. Tests of randomness, Kolmogorov-Smirnov tests, analysis of contingency tables, and coefficients of association.

**524 Biostatistical Computing.** Semester course; 3 lecture hours. 3 credits. The Statistical Analysis System (SAS) is both a powerful computer language and a large collection of statistical procedures. Students will learn how to create and manage computer data files. Techniques for thorough examination and validation of research data will be presented as the initial step of a complete computerized analysis. Descriptive statistics will be computed and statistical procedures such as t-tests, contingency tables, correlation, regression, and analysis of variance then applied to the data. Special attention will be paid to the applicability of each procedure. Students will be encouraged to analyze their own or typical data from their disciplines.

**530(S) Elements of Biometry.** Semester course; 5 lecture hours weekly during July. 2 credits. (For dental and medical fellows; graduate students with consent.) Concepts of biostatistics and epidemiology. Summary statistics and tables. Normal distribution and statistical association. Chi-square tests, t-tests, Wilcoxon test, and other tests. Sensitivity, specificity, odds ratios, and related topics. Clinical trials, prospective and retrospective studies, and other miscellaneous topics in biostatistics and epidemiology.

**531 Epidemiology and Risk Assessment.** Semester course; 3 lecture hours. 3 credits. No prerequisites. A survey course which focuses on the concepts of epidemiology and its role in risk assessment. This course will distill the underlying theory and principles used by epidemiologists. The course will introduce the sources and uses of vital data, their conversion into morbidity and mortality rates and indices. Procedures such as age standardization and the abridged life table will be introduced, as will concepts of disease transmission, epidemics, and various summary statistics. The Surgeon General's criteria for causation will be examined, designs in epidemiological research reviewed, and the use and limitations of epidemiological data in risk assessment described. Students should have a current VAX account and some background in mathematics and elementary statistics.

**543/STA 543 Statistical Methods I.** Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate standing or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis, and statistical measures; variation, sampling, and sampling distributions; point estimation, confidence intervals, tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance, and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit.

**546 Linear Models.** Semester course; 3 lecture hours. 3 credits. Prerequisites: BIS 513 and 543/553. Distribution of quadratic forms under normal theory; general linear model of full rank and less than full rank, Gauss-Markov theorem; estimability.

**553-554 Applied Statistics.** Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 200-201 or equivalent and one previous course in statistics and permission of instructor. Introduces applied statistics of biostatistics intended primarily for graduate students in the Department of Biostatistics. Reviews elementary probability theory and frequency distributions, sampling theory, principles of inference, one and two sample problems. ANOVA. Principles of experimental design. Variance components. Multiple com-

parison procedures. Block design and Latin Squares. Nested ANOVA. Multiway ANOVA. Correlation and regression analysis. Multiple regression. Nonlinear regression. ANCOVA, MANOVA. Repeated measures.

**571 Clinical Trials.** Semester course; 3 lecture hours. 3 credits. Concepts of data management, and statistical design and analysis in single-center and multi-center clinical trials. Data management topics include the collection, edition, and validation of data. Statistical design topics include randomization, stratification, blinding, placebo- and active-control groups, parallel and crossover designs, and power and sample size calculations. Statistical analysis topics include sequential and group sequential methods.

**572 Statistical Analysis of Biomedical Data.** Semester course; 3 lecture hours. 3 credits. Statistical methodology for data sets frequently encountered in biomedical experiments. Topics include analysis of rates and proportions, epidemiological indices, frequency data, contingency tables, logistic regression, life-tables, and survival analysis.

**581 Applied Multivariate Analysis.** Semester course; (Spring.) 3 lecture hours. 3 credits. Prerequisites: BIS 544 or 554. Focuses on multivariate statistical methods including Hotelling's T-square, MANOVA, multivariate multiple regression, canonical correlation, discriminant analysis, partially and blocking, multivariate outliers, components and factor analysis, and GMANOVA. Presumes the material in BIS 543-544 or BIS 553-554, including a matrix approach to multiple regression.

**615-616 Advanced Inference.** Semester course; 4 lecture hours. 4 credits. Prerequisites: BIS 514 and MAT 508, or permission of instructor. Mathematical preliminaries: probability and measure, integration, modes of convergence. Decision theoretical approach to statistical inference, decision rules, admissibility. Bayes and minimax procedures, invariance, complete classes. Point estimation; unbiasedness; efficiency; M, L, and R estimators; U statistics; Hypothesis testing: the Neyman-Pearson theory, unbiased and invariant tests, conditional tests, permutation tests, rank tests, likelihood-based tests. Interval estimation: confidence sets, relationship between confidence sets and families of tests, unbiased and invariant confidence sets. Asymptotics: stochastic convergence, statistical limit theorems, ARE; asymptotic likelihood-based procedures. Overview of robust statistical procedures.

**625 Analysis of Categorical Data.** Semester course; 4 lecture hours. 4 credits. (Alt. yrs. '93-'94) Prerequisites: BIS 554 and 572. Introduction to the theory and methods of analysis for binomial and multinomial data. Topics include exact and asymptotic analysis of contingency tables; measures of association and agreement; modelling approaches including logistic regression, loglinear models, and weighted least squares; methods for ordinal responses.

**631-632 Multivariate Analysis.** Semester course; 3 lecture hours. 3 credits. (Alts. yrs. '92-'93.) Prerequisites: BIS 514, 546, and 554. Introduction to the theory and methods of multivariate analysis; distributions; partial, multiple, and economical correlations; maximum likelihood and decision theoretical estimation; one- and two-sample tests; invariance: MANOVA, MANCOVA, GMANOVA, and multiple design models, nonparametric methods; inference with covariance matrices; principal components; factor analysis; discriminate analysis; clustering; multi-dimensional scaling.

**638-639 Statistical Design and Analysis in Toxicology.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. '92-'93.) Prerequisites for BIS students: BIS 514 and 554. Prerequisite for non-BIS students (who can enroll on a P/F basis): BIS 544. Classical bioassay; dose-response relationships, continuous and quantal data; prohibit and logit analysis, estimation of the ED50; combination experiments; low dose extrapolation and risk assessment; carcinogenicity, mutagenicity, and teratogenicity screening; overview of laboratory and experimental problems for the toxicologist.

**647 Survival Analysis.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '93.) Prerequisites: BIS 514 and 554. The analysis of survival (or failure time) data, with/without censoring. Actuarial and life-table methods, nonparametric and parametric estimation of survival functions, and comparison of survival curves; regression methods, such as the Cox proportional hazards model; competing risks; sequential models; applications to clinical trials.

**650 Design and Analysis of Response Surface Experiments.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. fall '93.) Prerequisites: BIS 546 and 554. Philosophy, terminology, and nomenclature for response surface methodology, analysis in the vicinity of the stationary point, canonical analyses, description of the response surfaces, rotatability, uniform information designs, central composite in design, and modern design criteria.

**655 Quantitative Epidemiology.** Semester course; 3 lecture hours. 3 credits. II. (Alt. yrs. '93-'94.) Prerequisites: BIS 554 and 572. Examines the quantitative aspects of epidemiological research. Includes causality in epidemiological research; the design, analysis, and interpretation of cohort and case-control studies; bias, confounding, and misclassification; matching, stratification, and adjusting of covariates; generalized linear models in epidemiological research, goodness-of-fit tests, and goodness-of-link tests.

**660 Sequential Analysis and Advanced Design and Analysis of Clinical Trials.** 3 lecture hours. 3 credits. II. (Alt. yrs. spring '95) Prerequisites: BIS 514 and 554. Sequential methods versus fixed sample methods; the sequential probability ratio test with extensions and modifications; some applications of Cox's theorem: overview of analysis of clinical trials; closed and truncated tests; group sequential tests in clinical trials; sequential monitoring; sequential estimation; other topics with emphasis in clinical trials.

**667 Advanced Data Analysis.** Semester course; 3 lecture hours. 3 credits. I. (Alt. yrs. '93-'94.) Prerequisites: BIS 514 and 554. Explores recently developed data analysis techniques to find the main features and underlying structure of data. Includes robust methods, bootstrap, linear model diagnostics, cross validation, nonparametric regression, optimal transformation, ACE algorithm, projection pursuit regression.

**690 Biostatistical Research Seminar.** Semester course; 1 lecture hour. 1 credit. Talks by the students, faculty, and visitors, describing recent research or reviewing topics of mutual interest.

**691 Special Topics in Biostatistics.** Lecture and laboratory hours by arrangement. 1-4 credits. The faculty (including visiting and adjunct professors) from time to time offer courses in newly developing areas of statistics and biometry. For information, contact the department secretary.

**697 Directed Research in Biostatistics.** Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## DEPARTMENT OF HUMAN GENETICS (GEN)

**501 Introduction to Human Genetics.** Semester course; 3 lecture hours. 3 credits. An introductory course in the principles of inheritance with particular reference to genetic variation in man.

**502 Advanced Human Genetics.** Semester course; 2-6 lecture hours. 2-6 credits. Prerequisite: GEN 501 or equivalent. A comprehensive study of the principles of specific areas in human genetics. This course supplements GEN 501 and is offered specifically for graduate students majoring in human genetics.

**511 Human Cytogenetics.** Semester course; 3 lecture hours. 3 credits. Prerequisites: GEN 501 and 502. I and II. A discussion of recent advances in human cytogenetics. Topics covered will include chromosome banding techniques and ultrastructure, meiosis, numerical and structural abnormalities, fragile sites, cancer cytogenetics, methodology for linkage studies, and population cytogenetics.

**516 Population Genetics.** Semester course; 3 lecture hours. 3 credits. Genetic and ecological factors affecting normal and abnormal variation within and between populations of organisms, especially man.

**518 Methods in Human Population Genetics.** Semester course; 3 lecture hours. 3 credits. I. Data analysis and discussion of methods including segregation analysis and linkage. Topics covered will include inbreeding, ascertainment, and genetic epidemiology.

**525-526 Practice of Genetic Counseling.** Continuous course; 3 lecture hours. 3 credits. 4 credits. Provides context for practice of genetic counseling through literature review and practical techniques. Places specific emphasis on pregnancy and childhood evaluation, interviewing techniques, social and ethical issues, including fieldwork in prenatal, general genetics and specialty clinics. Limited to genetic counseling students or by permission of instructor.

**527-528 Medical Genetics.** Continuous course; 3 lecture hours. 3 credits. Provides medical information and principles of human genetic disease with specific emphasis on the molecular basis of Mendelian disorders, disorders of sexual development, assessment of dysmorphic features, and the genetics of common diseases. Emphasizes the use of all available resource material in genetics. Limited to genetic counseling students or by permission of the instructor.

**531 Dental Genetics.** Semester course; 1 lecture hour. 1 credit. The basis of inheritance and variation in man, including simple and complex modes of inheritance, the nature of mutations, human chromosomal aberrations, variation in proteins and antigens, genetic aspects of some syndromes, and birth defects.

**600 Clinical Genetics.** Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: GEN 501 or equivalent. Practical experience in the genetic counseling clinic and

on ward rounds. Includes collection and analysis of family histories, genetic counseling, and introduction to genetic nosology.

**603 Mathematical and Statistical Genetics.** Semester course; 3 lecture hours. 3 credits. Prerequisite: BIS 543, 544 or equivalent. Provides an introduction to the rudiments of theoretical and applied mathematical population genetics, including the segregation of genes in families, genetic linkage, and quantitative inheritance. Emphasizes the methods used in the analysis of genetic data.

**614 Human Biochemical and Molecular Genetics.** Semester course; 4 lecture hours. 4 credits. Prerequisites: BIC 503-504, equivalent, or permission of instructor. Surveys the mechanisms and varieties of human gene mutations resulting in human genetic disease and emphasizes the different investigational disorders using current scientific literature.

**617 Segregation and Linkage Analysis.** Semester course; 3 lecture hours. 3 credits; every spring semester. Prerequisite: Introductory Biostatistics or permission of instructor. Introduces the theory and practice of segregation and linkage analysis as applied to human kinship data. Emphasizes the techniques for the detection, characterization, and mapping of single loci with large effects on phenotype.

**618 Advanced Segregation and Linkage Analysis.** Semester course; 3 lecture hours. 3 credits; fall semesters of even years. Prerequisite: GEN 617 or permission of instructor. Focuses on advanced topics related to segregation and linkage analysis. Presents alternatives to single major locus segregation patterns, advanced linkage analysis techniques such as multipoint mapping, and combined segregation and linkage analyses.

**619 Quantitative Genetics.** Semester course; 3 lecture hours. 3 credits. The effects of genes and environment on complex human traits with emphasis on: genetic architecture and evolution; non-genetic inheritance; mate selection; developmental change; sex-effects; genotype-environment interaction; revolving cause from effect; design of genetic studies, statistical methods and computer algorithms for genetic data analysis.

**620 Principles of Human Behavioral Genetics.** Semester course; 3 lecture hours. 3 credits. The theory of genetic and non-genetic transmission considered in relation to the design analysis and interpretation of studies to identify the principal genetic and environmental causes of behavioral variation. Included will be analysis of intelligence, personality, social attitudes, and psychiatric disorders.

**690 Genetic Research Seminar.** Semester course; 1 lecture hour. 1 credit. Selected topics in genetics presented by students and staff.

## DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY (MIC)

**365 Infection and Immunity (Dental Hygiene).** Semester course; 3 lecture and 2 laboratory hours. 3 credits. I. A study of infectious diseases of man with emphasis on the distribution properties and roles of pathogenic microorganisms and the varied responses of the host. Principles of prevention, control, and chemotherapy of infectious diseases are major components of the course. Microbiological procedures that

relate to nursing and dental hygiene practice are demonstrated, practiced, and evaluated in laboratory exercises and conferences.

**401 Microbiology.** Semester course; 3 lecture and 3 laboratory hours. 4.5 credits. Prerequisite: BIC 402 or equivalent. A study of the fundamental principles of microbiology with special emphasis on those aspects of the subject that are of importance in the control of the disease state. Offered in the School of Pharmacy and open primarily to pharmacy students in the junior year; others by permission of the instructor.

**502 Microbial Biotechnology.** Semester course; 3 lecture hours. 3 credits. Prerequisites: MIC 504 or equivalent. BIC 503 or equivalent. The application of basic principles to the solution of commercial problems. The course will cover the historical principles in biotransformations as related to primary and secondary metabolism, as well as recombinant DNA technology and monoclonal antibody production. The products to be considered include antibiotics, steroids, vitamins, organic acids, and solvents in addition to monoclonal antibodies and products resulting from the application of recombinant DNA technology.

**503-504/BIC 503-504 Biochemistry, Cell and Molecular Biology.** Semester course; 5 lecture hours. 5 credits. Prerequisite: undergraduate organic and physical chemistry or permission of instructor. A comprehensive survey of the cell and molecular biology of prokaryotic and eukaryotic cells.

**506 Immunobiology.** Semester course; 3 lecture hours. 5 credits. A survey of immunobiology as a total host response to foreign agents, covering the nature of antigens and antibodies, antigen-antibody reactions, immunocompetent cells, allergic reactions, tumor immunology, transplantation immunology, and immunogenetics.

**507 Techniques in Molecular Biology and Genetics.** 1 lecture hour. 1 credit. I. This course is designed to give an overview of the techniques utilized in modern molecular biology. The principles underlying techniques such as plasmid and phage cloning, RNA detection, PCR, DNA sequencing, genomic mapping, heterologous gene expression, and production and analysis of recombinant proteins will be discussed in detail by experts in the field.

**508-509 Introduction to Microbiology and Immunology Research.** Continuous course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: permission of instructor. Introduction to all active research programs in microbiology and immunology. Presentations of research programs by investigators and rotation of students through faculty laboratories to gain direct exposure to individual research projects. Required of all first-year graduate students.

**510 Scientific Integrity.** Semester course; 1 lecture hour. 1 credit. A survey of contemporary issues relating to scientific integrity and ethics. Topics include scientific fraud and misconduct, peer review, use of humans and animals in biomedical research, ownership of data, intellectual property, conflict of interest, scientific record keeping, and biomedical ethics.

**512 Laboratory Safety.** Semester course; 1 lecture hour. 1 credit. Describes health hazards commonly found in microbiology laboratories and appropriate safety precautions and responses. Includes hazards of working with bacteria, vi-

ruses, parasites, fungi, recombinant DNA procedures and regulations, and chemical, electrical, and fire hazards.

**513 Infections and Immunity (Dentistry).** Semester course; 3.5 lecture and 4 laboratory hours. 5.5 credits. A lecture and laboratory study of disease-producing microorganisms of man with special emphasis on the roles of microorganisms in oral diseases and related topics that are of importance in dentistry.

**515 Medical Microbiology I.** Semester course; 3 lecture hours. 3 credits. An introductory microbiology course designed to correlate determinative bacteriology and mycology to human disease. Emphasis will be on the interaction of the human host and infecting agents at the cellular and molecular level.

**516 Medical Microbiology II.** Semester course; 3 lecture hours. 3 credits. A comprehensive introduction to the basic principles of animal virology and human parasitology. Interactions of the infecting agents and hosts will be stressed at the molecular and cellular level.

**517 Molecular Genetics and Gene Expression.** Semester course; 4 lecture hours. 4 credits. This course was designed as a broad survey of basic genetic concepts as they pertain to molecular genetics and as an introduction to current integrated approaches to the study of the genetic apparatus of cells. Both prokaryotic and eukaryotic cellular and viral systems will be discussed with regard to organization and expression of their genetic material.

**551 Basic Science Core Curriculum for Postgraduate Dental Students.** Semester course; 3 lecture hours. 3 credits. This course is designed to provide postgraduate dental students with the educational experience in the basic science required for the successful completion of their specialty training programs. Selected lectures in the basic science areas related to dentistry are presented and are supplemented by assigned articles.

**604 Cell Physiology and Metabolism.** Semester course; 3 lecture hours. 3 credits. Prerequisite: MIC 504. An advanced course on the physiology and metabolism of prokaryotic and eukaryotic cells with some emphasis on the regulation of cell functions. Lectures and class discussions will focus on current scientific literature including review articles and original research papers.

**606 Molecular Biology and Genetics.** 3 lecture hours. 3 credits. I, II. Prerequisite: undergraduate organic and physical chemistry, or permission of the instructor. A comprehensive introductory course that describes the structure of the genetic material and the molecular mechanisms involved in its maintenance, replication, transmission and expression. Emphasis will be on experimental approaches integrating genetics and biochemistry in the studies of molecular genetics in prokaryotic and eukaryotic cellular and viral systems.

**653 Advanced Molecular Genetics.** Semester course; 3 lecture hours. 3 credits. Prerequisites: MIC 517 or equivalent or permission of instructor. An advanced course on the molecular mechanisms of gene regulation in prokaryotic and eukaryotic cells, with some emphasis on developmental control of gene expression, oncogenesis, and the molecular basis of antibody diversity. Lectures and class discussion will focus on current scientific literature, including original research papers and recent review articles.

**685 Advanced Immunobiology.** Semester course; 2 lecture hours. 2 credits. Lectures, seminars, and conferences on basic and clinical immunobiology. Topics have included tumor immunology, cell interactions in the immune response, genetics of the immune response, mechanisms of host-defense, and membrane receptors in immunology and neoplasia. Open primarily to residents, medical students, and graduate students with immunology backgrounds such as MIC 506.

**690 Microbiology Research Seminar.** Seminar course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the department seminar or special group seminar.

**691 Special Topics in Microbiology.** Semester course; 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

**697 Directed Research in Microbiology.** Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## DEPARTMENT OF PATHOLOGY (PAT)

**509 Basic Immunohematology.** Semester course; 3 lecture hours. 3 credits. A study of the blood groups in man, their mode of inheritance, and clinical significance.

**510 Basic Clinical Immunohematology.** Semester course; 4 lecture hours. 4 credits. Prerequisite: PAT 509 or permission of instructor. Collection, storage, and preservation of blood with indications for the transfusion of blood, blood components, and derivatives. Hazards and complications of blood transfusion will also be discussed in detail.

**513 Blood Banking Laboratory.** 8 laboratory hours. 4 credits. I, II. Prerequisite: PAT 509 or permission of the instructor. The laboratory is devoted to exercises in blood grouping, typing, genotyping, antibody screening, antibody identification, detection of Australia antigen (HB<sub>Ag</sub>), and the collection of blood from normal donors.

**515 Problems in Neuroscience.** 3 lecture hours. 3 credits. I. This multidisciplinary pathology/neuroscience course is designed to provide graduate students, residents, and others with a broad, updated, and integrated overview of neuropathology and the other neurosciences. Basic molecular and cellular principles of neurobiology are brought to life by selected clinical correlations and applications. The lectures introduce major CNS pathways and systems in conjunction with basic and advanced neuropathological principles. The disease topics are cohesively taught from several points of view by specialized faculty drawn from many departments, clinical and basic.

**521 Laboratory Techniques in Diagnostic Pathology.** 3 lecture hours. 3 credits. I. This team taught course includes principles of automated and non-automated testing, diagnostic testing, and an active laboratory demonstration of each method.

**522 Clinical Chemistry.** Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. The metabolic basis of disease and the interpretation of laboratory data for diagnosis and patient management. May be repeated up to 12 credits.

**530 Clinical Immunopathology.** Semester course (second semester only); 2 lecture and 6 laboratory hours. 5 credits. Prerequisite: MIC 506 or equivalent. Application of immunologic methods to disease diagnosis and management with emphasis on immunopathogenetic mechanisms of organ systems: endocrine, lympho-reticuloendothelial, renal, gastrointestinal, cardiopulmonary, skin, neurologic, etc. Technical aspects of testing, test interpretation, and clinical case presentations will be intermingled to provide a comprehensive understanding of clinical immunopathology and its role in patient care.

**570 Experimental Approaches to Tumor Biology.** 3 lecture/discussion hours. 3 credits. Introduces central problems in tumor biology and the methods available for their study. Develops through lectures and presentations skills in critical review and interpretation of research reports.

**590 Experimental Pathology Seminar.** Semester course; 1 lecture hour. 1 credit.

**601 General Pathology (Dentistry).** Semester course; 3 lecture and 6 laboratory hours. 6 credits. Instruction in the basic principles regarding alteration of structure and function in disease and in the pathogenesis and effect of disease in the various organ systems.

**602 Experimental Pathology of Infectious Disease.** Semester course; 2 lecture and 6 laboratory hours. 5 credits. Autopsies and histopathology are studied to acquaint the graduate student with infectious disease pathology. Various animal and other models are used to demonstrate pathogenesis of some infections and other inflammatory mechanisms.

**606 Biochemistry of Disease.** Semester course; 2 lecture hours. 2 credits. Prerequisite: BIC 503. A detailed study of the biochemical mechanisms involved in the pathogenesis of certain diseases.

**610 Physiology of Blood Coagulation.** By special arrangement with instructor. Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: BIC 503 and PIO 502. The historical development of bleeding and clotting disorders with current diagnostic methodology and treatment.

**612 Viral Immunohistopathology and Serodiagnosis.** 3 lecture and 4 laboratory hours. 5 credits. In-depth treatise of immunologic and immunopathologic mechanisms of viral diseases, focusing on organ systems: neurologic, immunologic, hematopoietic and lymphatic, gastrointestinal, cardiopulmonary, dermatologic, genitourinary, etc. Findings based on histopathology and immunocytochemistry, using the latest clinical laboratory methods, will be applied to diagnosis and management of the patient with acute, latent, or chronic viral infection. Technical aspects of methodology, test interpretation on the basis of clinical information, and clinical case presentations in the actual hospital setting will be intermingled to provide a comprehensive understanding of diagnostic virology and its role in patient care.

**614 Pathogenesis of Infectious Disease (Bacterial Agents).** Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisite: MIC 515 or equivalent. Emphasis is on the pathogenesis and epidemiology of infectious disease. The dynamic interaction among the host, microorganism, and environment are documented using the data obtained from MCV Hospitals. Students have the opportunity to apply

laboratory data and techniques to present microbiological problems in clinical areas.

**615 The Pathobiology of Experimental Animal and Human Neoplasia.** 2 lecture hours and 4 laboratory hours. 4 credits. An advanced lecture/laboratory course covering relevant topics in chemical, viral, and radiation carcinogenesis, genetic aspects of neoplastic disease, the biochemistry and molecular biology of cancer, and the pathological features of neoplastic disease. The laboratory provides a background in recognizing the appearance and characteristics of various types of neoplasms in experimental animals and in man.

**690 Clinical Chemistry Seminar.** Semester course; 1 lecture hour. 1 credit. Graduate students, residents, and staff present topics of current interest in clinical chemistry.

**691 Special Topics in Modern Instrumental Methods.** By special arrangement with instructor. Semester course; 1 lecture and 2 laboratory hours. 2 credits. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studied.

**697 Research in Pathology.** 1-15 credits. Research leading to M.S. or Ph.D. degree and elective research projects for other students.

## DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY (PMC)

**371 Pathophysiology and Pharmacology 1.** Continuous course; 4 lecture hours. 4 credits. This is a course, designed for health information management students, that integrates pathophysiology and pharmacology to give the student a sound understanding of these two medical sciences and their interrelationships. This course covers concepts and principles of pathophysiology and pharmacology; disease mechanisms and mechanisms of drug action; inflammation; infection; repair; cell growth and neoplasms; immunity; endocrine disorders; hematologic disorders; GI disorders; anti-infective, antineoplastics, autonomic drugs; GI drugs; drugs affecting the blood; immune mechanisms and endocrine drugs; and other relevant pharmacology.

**372 Pathophysiology and Pharmacology 11.** Continuous course; 3 lecture hours. 3 credits. This course, designed to provide health information management students with a sound knowledge of pathophysiology and pharmacology, integrates and correlates these medical sciences, covering cardiovascular, renal, respiratory, neurologic, musculoskeletal, GU and other pathophysiologic states; cardiovascular drugs; renal and central nervous system drugs; and respiratory and other relevant pharmacology. PMC 372 is a continuation of PMC 371.

**400 Drugs and Their Actions.** Semester course; 3 lecture hours. 3 credits. This is a survey course in pharmacology which will have two major themes. The first theme will focus on all the major classes of drugs used as therapeutic agents, with a major emphasis on mechanisms of drug action and therapeutic application. The second theme will focus on the abuse and misuse of several of these agents, with a major emphasis on the etiology, prevention, and rehabilitation of human drug dependence. Open to all junior and senior undergraduate students.

**401 Environmental Toxicology.** Semester course; 3 lecture hours. 3 credits. An environmental health science survey course focusing on the source, ecology, chemistry, biodisposition, and toxicology of toxic chemicals in the biosphere with special emphasis on air, water, surface, and food contamination.

**403 Principles of Pharmacology (Pharmacy).** Semester course; 3.5 lecture and 2 laboratory hours. 4.5 credits. The basic principles of pharmacology and an in-depth consideration of the biodisposition and mechanisms of action of these agents. Drugs acting on the autonomic nervous system, chemotherapeutic agents, and endocrine agents are covered this semester.

**404 Pharmacological Agents (Pharmacy).** Semester course; 3 lecture hours. 3 credits. Includes drugs acting on the cardiovascular and central nervous systems and principles of toxicology. (This is a continuation of PMC 403.)

**413 Pharmacological and Clinical Correlations.** Semester course; 3 lecture hours. 3 credits. Primarily for nursing students. This course integrates and correlates clinical experiences with the effect of drugs on biochemical, physiological, and pathological systems.

**441 Pharmacology (Dental Hygiene).** Semester course; 5 lecture hours. 5 credits. A didactic course designed to emphasize the principles of pharmacology and pain control and the rationale of drug actions, uses, and adverse effects.

**448 Drug Dependence.** Semester course; 3 lecture hours. 3 credits. Prerequisite: junior or senior standing, or permission of instructor. A broad survey course in problems of drug use and abuse intended primarily for students in the biomedical sciences, social sciences, or education. It will focus on the pharmacology of psycho-active drugs as well as a study of the psychological and sociological factors in drug taking behavior, rehabilitation methods, and drug abuse prevention. This course may not be taken in lieu of any pharmacology offerings in the professional schools on the MCV Campus. For graduate credit see PMC 548.

**515 Pharmacology for Nurse Anesthetists.** Semester course; 3 lecture hours. 3 credits. The basic principles of pharmacology including mechanisms of absorption, distribution, biotransformation, elimination, dose-response relationships, drug receptor interactions are presented followed by a detailed discussion of autonomic, cardiovascular, and renal pharmacology as it relates to nurse anesthesia.

**516 Pharmacology for Nurse Anesthetists.** Semester course; 3 lecture hours. 3 credits. A detailed presentation of the pharmacology of classes of drugs used by nurse anesthetists including agents with primary therapeutic effect on the brain and endocrine glands. General and regional anesthetics will be emphasized.

**535 Introduction to Toxicology.** Semester course; 4 lecture hours. 4 credits. The basic principles of toxicology and toxicological evaluations; correlations of toxicological responses with biochemical, functional, and morphological changes; environmental (including occupational and public health), forensic and regulatory concerns, and risk assessment and management are presented for graduate students in the biomedical sciences.

**536 Principles of Pharmacology and Toxicology.** Semester course; 5 lecture hours. 5 credits. Prerequisites: PIO 501 and BIC 503 or permission of instructor. A comprehensive course in pharmacology for graduate students. The mechanisms of action of major classes of pharmacology active agents and basic principles of pharmacology are discussed. Topics discussed in the first half of the course include drug absorption, distribution, and metabolism; receptor theory; chemotherapy; and endocrine pharmacology.

**537 Principles of Pharmacology.** Semester course; 5 lecture hours. 5 credits. (Continuation of PMC 536.) Prerequisites: PMC 536 or permission of instructor. Topics covered in the second semester include autonomic, cardiovascular, and central nervous system pharmacology.

**539 Principles of Toxicology.** 5 lecture hours. 5 credits. Prerequisite: PMC 536 or permission of the instructor. A comprehensive course in toxicology for graduate students in PMC and advanced graduate students from other programs. A target organ approach is used to correlate toxicological lesions with biochemical, functional and/or morphological changes. Approaches to toxicological problems are covered from aspects of experimental design to occupational/environmental concerns and legislative/regulatory actions.

**548 Drug Dependence.** Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate or post-baccalaureate standing. A broad survey course in problems of drug and alcohol use and abuse. It will focus on the pharmacology of abused drugs as well as a study of the psychological and sociological factors in drug-taking behavior, rehabilitation methods, and prevention. This course may not be taken in lieu of any pharmacology offerings in the professional schools on the MCV Campus.

**597 Introduction to Pharmacological Research.** 1-12 credits. Prerequisite: permission of instructor. Rotation research in pharmacology and toxicology laboratories for beginning graduate students.

**609 General Pharmacology and Pain Control.** Continuous course; 2 lecture hours per week for 2 semesters. One grade for 4 credits at end of 2nd semester. The basic principles of pharmacology, including mechanisms of absorption, distribution, biotransformation, elimination; dose-response relationships, drug-receptor interactions are presented followed by detailed discussion of the various classes of drugs, with special consideration given to mechanisms of action and untoward effects of drugs used in dentistry to control pain and related symptoms.

**611 General Pharmacology and Pain Control.** Semester course; 2 lecture and 1 laboratory hours. 2 credits. A continuation of PMC 609.

**625 Biochemical Pharmacology.** Semester course; 3 lecture hours. 3 credits. I. (Alt. yrs. fall '92.) Prerequisite: PMC 536 or consent of instructor. Covers biochemical and molecular biology approaches to pharmacological problems. Emphasizes signal transduction, oncogenes, protein kinases and the control of cellular proliferation. Examines uptake, metabolism and intracellular effects of anticancer drugs, particularly the interaction with DNA.

**632 Neurochemical Pharmacology.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '93.) Prerequisite:



PMC 536 or consent of instructor. Investigates the mechanisms of drugs acting on the central nervous system in relation to their effects on endogenous neurochemical systems. Examines the milieu in which drugs act upon the central nervous system, experimental techniques frequently used in neuropharmacology, specific neurotransmitter systems, as well as the mechanism of action of specific drugs.

**633 Behavioral Pharmacology.** Semester course; 3 lecture hours. 3 credits. (Alts. yrs. fall '93.) This is a survey course covering research on the effects of drugs on behavior. The major emphasis will be on schedule-controlled learned behavior. Additional topics include drug self-administration, drug discrimination, and continued drug effects and behavioral toxicology. The course focuses primarily on laboratory research in animals although human research will also be covered. The relevance of this research literature to drug treatment of behavioral disorders and substance abuse will be discussed.

**637 Cellular Pharmacology.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '94.) Prerequisite: PMC 536 or consent of instructor. The principles governing the interactions of drugs and hormones with their cellular receptors are presented followed by a discussion of the biochemical mechanisms by which the interactions are transduced into specific cellular responses. Lectures are supplemented with demonstrations and student presentations of current literature in the area.

**638 Cellular Mechanisms of Toxicology.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. fall '93.) Prerequisite: PMC 536 or consent of course director. An holistic approach is taken to describe and analyze toxicological information. Intact animal, organ, cellular, and biochemical responses to toxic agents are presented. Immunologic, genetic, endocrine, and central nervous system paradigms and their relationship to the mechanism of action of toxic agents as well as the predictive value of tests of these systems are presented. Kinetics and metabolism of toxic agents as well as statistical and analytical procedures are integrated into the discussions.

**639 Drug Development.** Semester course; 1 lecture and 4 laboratory hours. 3 credits. (Alts. yrs. fall '92.) Prerequisites: PMC 536 and 537 or their equivalents. The principles of drug screening, advanced testing, and procedures necessary prior to the clinical evaluation of new products are described. An emphasis is placed on physiological type procedures used in pharmacology.

**641 Pharmacology Review (Dentistry).** 1 lecture hour. 1 credit. A review course in pharmacology for senior dental students.

**642 Patients, Drugs, Diseases, and Dentists.** 1 lecture hours. 1 credit. II. Discussion of patients, their diseases, drugs used to treat these diseases, and how they relate to the practice of dentistry.

**644 Forensic Toxicology.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. (Alt. yrs. spring '92.) Lecture and demonstrations in which common poisons and groups of poisons are discussed in relation to detection, diagnosis, and treatment of poisoning. Demonstrations include basic principles of analytical toxicology, forensic science, and courtroom testimony.

**646 Immunopharmacology/Immunotoxicology.** 3 lecture hours. 3 credits. (alt. yrs. Spring '92) An advanced course to give students the basic knowledge and concepts needed to critically assess the research being conducted into cytokines, receptor expression, signal transduction, therapeutic intervention, and toxicity as it relates to the immune system. Includes biochemical, molecular, genetic, clinical therapeutic and regulatory perspectives of this rapidly advancing field in addition to immunological, pharmacological and toxicological ones.

**690 Pharmacology Research Seminar.** Semester course; 1 lecture hour. 1 credit. Members of the departmental staff, students, and visiting lecturers participate in discussions on topics of current and historical interest.

**691 Special Topics in Pharmacology.** 1-4 credits. Prerequisite: permission of instructor. Special topics in pharmacology or toxicology covered in less detail in other courses will be studied in depth in this course.

**697 Directed Research in Pharmacology.** 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective projects for other students.

## DEPARTMENT OF PHYSIOLOGY (PIO)

**461 Introduction to Human Physiology.** Semester course; 3 lecture hours. 3 credits. Prerequisites: biology, general chemistry, and human anatomy. An introductory course to human physiology based on an analysis of organ systems.

**482 Mammalian Physiology.** Semester course; 4 lecture hours. 4 credits. A comprehensive study of the function of mammalian organ systems, designed primarily for pharmacy students.

**501 Graduate Mammalian Physiology.** Semester course; 5 lecture hours. 5 credits. Prerequisites: biology, chemistry, and physics. A comprehensive study of the function of mammalian organ systems, designed primarily for graduate students. **502 Mammalian Physiology.** Semester course; 5 lecture hours. 5 credits. Prerequisite: same as for PIO 501. A comprehensive study of the function of mammalian organ systems, designed primarily for dental students.

**504 Mammalian Physiology.** Semester course; 3 lecture hours. 3 credits. A comprehensive study of the function of mammalian organ systems, designed primarily for high school science teachers and given off campus.

**505 Mammalian Physiology.** Semester course; 3 lecture hours. 3 credits. A comprehensive study of the function of mammalian organ systems, designed primarily for graduate students in the Industrial Hygiene Curriculum.

**591C90 Selected Topics in Nutrition.** 2 lecture hours. 2 or 3 credits. Weekly discussion of selected topics in nutrition. Topics change yearly. Topics range from biochemical aspects of nutrition to International Nutrition. Past topics have included nutrition and exercise, diet and cancer, total parenteral nutrition, alcohol nutrition, food safety, drug-nutrient interactions, nutrition and immunological response, cholesterol nutrition, nutrition in Czechoslovakia, salty taste mechanisms, vitamin A, vitamin D.

**604 Cell Physiology.** Semester course; 4 lecture hours. 4 credits. A description of the functional properties of cells in terms of physics and chemistry. Topics discussed include cell structure and cytochemistry, bioenergetics, secretion, transport of material across membranes, excitation, and contractility.

**605 Mathematical Physiology.** Semester course; 3 lecture hours. 3 credits. The application of set theory to physiological problems. Physiological functions and mappings. Linear transformations. The use of complex numbers. Limits, derivatives, and integrals and their use in physiology. Rate processes. Physiological function and its dependence on many variables. Probabilistic ideas in physiology.

**606 Physical Principles in Physiology.** Semester course; 4 lecture hours. 4 credits. Prerequisite: PIO 605 or permission of instructor. A survey of those principles of physics and physical chemistry underlying physiological processes. Topics include energetics of equilibrium and nonequilibrium systems, electrode processes, reaction-diffusion systems, kinetics, photochemistry, physical techniques in physiological research.

**612 Cardiovascular Physiology.** Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. An in-depth study of the original literature in selected areas of cardiovascular physiology.

**614 Membrane Transport.** Semester course; 2 lecture hours. 2 credits. Advanced description of membrane transport processes.

**615 Neurophysiology.** Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. An in-depth study of the original literature in selected areas of neurophysiology.

**617 Endocrine Physiology.** Semester course; 3 lecture hours. 3 credits. (Alts. yrs. '92-'93.) Prerequisites: courses in mammalian physiology and biochemistry, or permission of instructor. An in-depth study of the original literature in selected areas of endocrine physiology.

**618 Renal and pithelial Physiology.** Semester course; 3 lecture hours. 3 credits. (Alt. yrs. '92-'93.) Prerequisite: permission of instructor. An in-depth study of selected areas of renal and epithelial physiology: Topics include mechanisms of salt and water transport in the nephron, urinary concentrating mechanisms, hormonal regulation of ion transport, role of the kidney in acid-base homeostasis, diuretics, ion transport in amphibian epithelia, water and solute transport in gastrointestinal epithelia and lingual epithelia.

**630 The Application of Network Thermodynamics to the Analysis and Computer Simulation of Life Processes.** Semester course; 3 lecture hours and 4 laboratory hours. 5 credits. Prerequisite: consent of instructor. Network thermodynamics applied to organization in living systems. Relations between biological and electrical networks. Simulation of nonlinear, complex dynamic, pharmacological, and biochemical systems with applications to diffusion, blood flow, reaction to kinetics, membrane transport (cellular and epithelia), endocrine effects, cellular and whole body pharmacokinetics, model design and verification, metabolic regulation and control, reaction-diffusion systems, morphogenesis, others.

**690 Physiology Research Seminar.** Semester course; 1 lecture hour. 1 credit. Reports on current physiological research problems presented by graduate students, staff, and visiting lecturers.

**691 Special Topics in Physiology.** Semester course; 1-4 credits. Prerequisites: a 500-level physiology course or equivalent and permission of instructor. This course is designed to provide study of specific topics in physiology. The topics offered include cell physiology, neurophysiology, cardiopulmonary physiology, renalgastrointestinal physiology, and endocrinology.

**697 Directed Research in Physiology.** 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects to other students.

## Departments and Divisions of Instruction

### DEPARTMENT OF ANATOMY

#### Professors—

Jollie (Chair)	Astruc
Goldberg	Haar
Johnson	Krieg
Leichnetz	Mayer (Anesthesiology)
Povlishock	Seibel
Sholley	Spencer
Szakal	

### DEPARTMENT OF ANESTHESIOLOGY

#### Professors—

Kallar (Chair)	Aghdami
Keenan	Mayer
Price	Rafii

#### Associate Professors—

Barsanti	DiNunzio
Drago	England
Fragneto	Frederick
Martin	Michael
Williams	Kelley
Mao	Hudson
Kane	Lewelt
Nakatsuka	Shah
Stewart	Wolman

#### Associate Clinical Professors—

Baird

#### Assistant Professors—

Baines	Dunwiddie
Everett	Gehr
Hurt	Johnson, E. B.
Kirby	Littlewood
Long	Pan
Ross	Shapiro
Stallings	

#### Assistant Clinical Professor—

Schroeder

### DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOPHYSICS

#### Professors—

Yu (Chair)	Banks
Brandt	Chlebowski
Collins	DeVries
Evans	Franson
Grogan	Liberti

Maggio	Peterson
Schirch	Shelton
Wright, C.	Zehner
Affiliate Professors—	
Abraham	Cochran
(Medicinal Chemistry) <sup>1</sup>	(Periodontics,
DeLorenzo (Neurology) <sup>1</sup>	San Antonio, Texas) <sup>1</sup>
Hawkrigde (Chemistry) <sup>1</sup>	Roth (Pediatrics) <sup>1</sup>
Scott (Medicine) <sup>1</sup>	
Associate Professors—	
Ariga	Harris
Van Tuyle	Wright, H.
Affiliate Associate Professors—	
Diegelmann (Surgery) <sup>1</sup>	
Gonzales-Ros	
(Biochemistry-Spain) <sup>1</sup>	
Assistant Professors—	
Ghosh	Newman
Roesser	Saito
Scarsdale	
Affiliate Assistant Professors—	
Dominey (Chemistry,	
University of Richmond) <sup>1</sup>	

## DEPARTMENT OF BIostatISTICS

Professors—	
Carter (Chair)	Choi
Kilpatrick	
Affiliate Professors—	
Chinchilli	Flora
Peace	
Associate Professors—	
Ko	McClish
Affiliate Associate Professors—	
Enas	
Assistant Professors—	
Best (Psychiatry)	Elswick
Gennings	Lu
Instructors—	
Boyle	

## Program in Biomedical Engineering

Professors—	
Freer (Director)(Pharmacology and Toxicology) <sup>1</sup>	
Abraham (Medicinal Chemistry) <sup>1</sup>	
Adelaar (Orthopedics)	Baumgarten (Physiology)
Biber (Physiology)	
Byron (Pharmacy and Pharmaceuticals)	
Cardea (Orthopedic Surgery) <sup>1</sup>	
Chlebowski (Biochemistry and Molecular Biophysics)	
Cleary (Physiology)	DeSimone (Physiology)
Fatouros (Radiation Physics)	
Haas (Cooperative Graduate Engineering) <sup>1</sup>	
Harkins (Gerontology)	Lamb (Physical Therapy)
Lenhardt	Marmarou (Surgery) <sup>1</sup>
Miller (Pathology)	Ottenbrite (Chemistry)
Pittman (Physiology)	Regelson (Medicine)
Wechsler (Surgery)	
Associate Professors—	
Funai (VA Medical Center)	
Gowdy (Physics) <sup>1</sup>	
Harris Biochemistry and Molecular Biophysics)	
Kraft (Radiology)	Lutz (Surgery) <sup>1</sup>
Moore (Dentistry)	Ochs (Neurology) <sup>1</sup>
Sarett (General Dentistry)	White

Wright, T. (Biochemistry and Molecular Biophysics) <sup>1</sup>	
Zuelzer (Surgery) <sup>1</sup>	
Assistant Professors—	
Damiano (Surgery)	Fei
Heck (Physiology)	Hsai (Surgery) <sup>1</sup>
Karnes (Pharmacy and Pharmaceuticals)	
Kellogg (Medicinal Chemistry)	
Muthukumaraswamy (Pharmacology and Toxicology) <sup>1</sup>	
Spratt (Surgery)	Wayne
Instructors—	
Scarsdale (Biochemistry and Molecular Biophysics) <sup>1</sup>	

## DEPARTMENT OF DERMATOLOGY

Clinical Professors—	
Blaylock	Caravati
McMullan	Scoggins
Trice	
Associate Clinical Professor—	
Booth	Young
Associate Professor—	
Garrett (Chair)	
Assistant Clinical Professors—	
Becker	Fohl
Hudgins	Kelly
Knight	Konerding, H.
Reams	Vernon, H.
Clinical Instructors—	
Blanchard	Kitces, E. C.

## DEPARTMENT OF FAMILY PRACTICE

Professors—	
Marsland, D. (Chair)	Munson, P.
Clinical Professors—	
Carter	Gilliam
Harris	Mitchell
Spence	White
Associate Professors—	
Coleman	Kuzel
Whitehurst-Cook	Williams
Associate Clinical Professors—	
Bennett	Buston
Elmore	Evans
Jones	Lewis
McCarter	Merkel
Moffatt	Moss
Owen	Petrizzi
Royal	Satchwell
Smith	Sughrue
Temple	Vickery
Wenleder	Wigand
Assistant Professors—	
Boles	Gary
Jeter	Oldham
Assistant Clinical Professors—	
Ball	Beaulieu
Blackburn	Braza
Bremer	Burroughs
Buston	Clark
Clement	Cole
Crowder	Daniel
Dappen	Davis
Eddy	Farrell
Felton	Filak
Foos	Forrester
Garfinkel	Gravel
Hearst	Heddings
Hoffman	Horne

<sup>1</sup>Department in parentheses indicates primary appointment.

Hubach	Jenkins
Johnson	Katchinoff
Kelly	Kentigh
Kincaid	King
Koenig	Layman
Leavens	Leblang
Ledwith	Lowery
Lustig	MacConnachie
Mackie	MacMillan
McCormally	Merrill
Miller	Miller
Mitchell	Moffatt
Moyer	Muffelman
Newman	Nichols
Norfleet	O'Brien
Oglesby	Overholzer
Paige	Parker
Patterson	Peacock
Petrizzi	Porter
Ramsey	Robbins
Romano	Rosenbaum
Shealy	Silverstein
Sim	Skaggs
Solan	Soles
Solin	Sowder
Stanford	Steinmetz
Stennett	Sullivan
Swensson	Tunstall
Turner	Weathington
Weaver	Whitley
Williams	Wise
Woolf	Wright
Yeatts	Youngblood
Zakaib	
Instructor—	
Olchanski	
Clinical Instructors—	
Chisholm	Cobaugh
Dagford	Petrizzi
Pope	

## DEPARTMENT OF HUMAN GENETICS

Distinguished Professor—	
Eaves	
Professors—	
Nance (Chair)	Brown, J.
Kendler (Psychiatry) <sup>1</sup>	MacLean (Psychiatry) <sup>1</sup>
Affiliate Professors—	
Black	Howard-Peebles
Schulman	Sprecher
Associate Professors—	
Bodurtha	Chinnici (Biology) <sup>1</sup>
Corey	
Holmes (Microbiology and Immunology) <sup>1</sup>	
Redwine (Obstetrics/Gynecology) <sup>1</sup>	
Rizzo (Pediatrics) <sup>1</sup>	
Assistant Professors—	
Carter (Biochemistry and Molecular Biophysics) <sup>1</sup>	
Jackson-Cook	Lloyd
Markello	Meyer
Neale	Pandya

## DEPARTMENT OF INTERNAL MEDICINE

Professors—	
Adler	Archer
Blackard	Cooper
Cowley	Dessypiris
Eckberg	Fairman
Gardner	Glauser
Goldman	Hess
Kontos	Makhlouf
Markowitz	Mohanty
Moore	Mullinax
Nixon	Oken
Ornato	Owen
Regelson	Retchin
Richardson	Romhilt
Ruddy (Acting Chair)	Schnoll
Schoolwerth	Schwartz, C.
Schwartz, L.	Scott
Stacy	Switz
Vetrovec	Vlahcevic
Watlington	Witherspoon
Yanovich	Zfass
Clinical Professors—	
Freund	Levy
Mauck	
Associate Professors—	
Bechard	Boling
Buchsbaum	Buckley
Carr	Clore
DiSciascio	Downs
Ellenbogen	Feldman
Fisher	Fowler
Gewirtz	Grant
Hastillo	Heuman
Hillner	Horvath
Jacobson	Johnson
Kaplan	Kaplowitz, L.
Kerkering, T.	Kirby
Kirschbaum	Mulligan
Nestler	Paulsen
Pears	Perry
Polatty	Poses
Proctor	Roberts
Schubert	Sessler
Sica	Smith, W. K.
Topaz	Westin
Wise	Wong
Zieve	
Research Associate Professors—	
Britt	Li
Wei	
Associate Clinical Professors—	
Bailey	Blount
Cooke	Greenberg
Holland	Kupermine
McCue	McGehee
Mitchell	
Assistant Professors—	
Abbey	Ahmed
Arrowood	Barrett
Becker	Bell
Betcher	Blunk
Bourlier	Brannen
Clemo, F.	Clemo, S.
Delegge	Desch
Doyle	Duran-Guerraty

<sup>1</sup>Department in parentheses indicates primary appointment.

Evans	Funai
Gehr	Gentili
Godschalk	Goudreau
Huber	Ibrahim
Jairath	Jesse
Jones	Karan
Katz	Kelley
King	Klein
Krystal	Lavoie
Levy	Lewis
Loesser-Casey	Luketic
Malloy	McHenry
McPherson	McMurtry
Meyer	Minisi
Mitchell	Monroe
Moses	Moxley
Orenstein	Pandak
Peberdy	Perez
Pinson	Purdum
Quigg R. J., Jr.	Racht
Rao	Roberts, N.
Roberts, W.	Robinson
Samuels	Sanders
Sanyal	Schmitt, J.
Schreoder	Seither
Shiffman	Smith, T.
Smith, W.	Stambler
Stravitz	Stuckey
Swerdlow	Terpstra
Wassef	Wells
Willett	Willis
Williams	Wilson-King
Wood	

## Research Assistant Professors—

Cooper	Drewnowska
Edwards	Fisher
Hanna	Kukreja
Levasseur	Moore
Taylor	Webb

## Assistant Clinical Professors—

Baskerville	Baylor
Brodeur	Burke, J.
Burke, P.	Cader
Dunnington, G.	Eapen
Farrell	Fitzgerald
Gayle	Goldman, S. A.
Halloran	Henley
Hughes, D.	Jessee, F.
Kohli	Lin
Link	Longacher
Martyak	Mitchell
Phillips, C.	Radtke
Sporn	Tucker, S. C.
Turner	Woogen
Wooten	Zacharias, C.

## Instructors—

Adams	Cardwell
Clark	Edwards
Foster	Lesniak
Ripley	Roberson
Rogers	Rosenthal
Struzziero	

## Clinical Instructors—

Ansell	Ashworth
Davis	Drake
Nemec	Nottingham
Poindexter	Pritchard
Shapiro	

## Division of Cardiology

## Professors—

Cowley	Eckberg
Hess	Kontos
Mohanty	Nixon
Richardson	Romhilt
Vetrovec (Division Chair)	

## Clinical Professors—

Freund	Mauck
--------	-------

## Associate Professors—

DiSciascio	Ellenbogen
Hastillo	Paulsen
Pears	Topaz

## Associate Clinical Professors—

Blout	Greenberg
Holland	McCue

## Assistant Professors—

Ahmed	Arrowood
Clemo	Doyle
Funai	Goudreau
Ibrahim	Jesse
Loesser-Casey	Malloy
Minisi	Peberdy
Quigg, R.	Robinson
Stambler	Wood

## Research Assistant Professors—

Hanna	Kukreja
Levasseur	Taylor
Wei	

## Assistant Clinical Professors—

Baskerville	Dunnington
Eapen	Fitzgerald
Gayle	Goldman
Halloran	Henley
Hughes	Kohli
Lin	Martyak
Phillips	Radtke
Sporn	Tucker
Wooten	Zacharias

## Instructor—

Edwards

## Clinical Instructor—

Ashworth	Davis
Drake	Nottingham
Pritchard	

## Division of Clinical Pharmacology

## Associate Professors—

Proctor	Sica (Division Chair)
---------	-----------------------

## Assistant Professor—

Wilson-King

## Division of Emergency Medical Service

## Professor—

Ornato

## Assistant Professors—

Jones	Racht
Williams	

## Division of Endocrinology

## Professors—

Adler	Blackard (Division Chair)
Watlington	

## Clinical Professor—

Levy

## Associate Professors—

Clore	Downs
-------	-------

Nestler  
Research Associate Professor—  
Li  
Assistant Professor—  
Levy  
Assistant Clinical Professor—  
Burke  
Clinical Instructor—  
Shapiro

### Division of Gastroenterology

Professors—  
Makhlouf Moore  
Schwartz Switz  
Vlahcevic (Division Chair) Zfass  
Associate Professors—  
Heuman Kirby  
Schubert  
Associate Clinical Professor—  
Bailey  
Assistant Professors—  
Delegge Jairath  
Luketic McHenry  
Pandak Purdum  
Sanyal Shiffman  
Stravitz Wassef  
Research Assistant Professors—  
Cooper Moore  
Assistant Clinical Professors—  
Farrell Longacher  
Mitchell Woogen  
Clinical Instructor—  
Nemec

### General Medicine and Primary Care

Professor—  
Gardner Witherspoon  
Associate Professors—  
Boling Buchsbaum  
Hillner Johnson  
Kaplan Perry  
Poses  
Assistant Professors—  
Abbey Becker  
Bourlier Brannen  
Clemo Huber  
Kelley Klein  
Lewis Meyer  
Pinson Samuels  
Schmitt Schroeder  
Smith Stuckey  
Willett  
Research Assistant Professor—  
Webb  
Assistant Clinical Professor—  
Link  
Instructors—  
Adams Cardwell  
Clark Foster  
Roberson Rogers  
Rosenthal

### Division of Geriatric Medicine

Professors—  
Retchin Scott (Division Chair)  
Associate Professor—  
Mulligan

Assistant Professors—  
Barrett Gentili  
Godschalk McMurtry  
Perez  
Instructor—  
Struzziero

### Division of Hematology/Oncology

Professors—  
Dessypris Goldman (Division Chair)  
Yanovich  
Associate Professors—  
Carr Gewirtz  
Grant Roberts  
Smith Westin  
Associate Clinical Professors—  
Kuperminc Mitchell  
Assistant Professors—  
Blunk Desch  
Krystal Mitchell  
Seither Smith  
Swerdlow  
Research Assistant Professor—  
Edwards  
Clinical Instructor—  
Ansell

### Division of Immunology and Allergy

Professors—  
Mullinax Owen  
Ruddy Schwartz  
Associate Professors—  
Buckley Wise  
Associate Clinical Professor—  
Cooke  
Assistant Professors—  
Evans Moxley  
Roberts Sanders  
Willis Rao  
Roberts  
Assistant Clinical Professors—  
Baylor Brodeur  
Cader Jessee  
Turner

### Division of Infectious Diseases

Professors—  
Archer (Division Chair) Markowitz  
Associate Professors—  
Fisher Jacobson  
Kaplowitz Kerkering  
Wong  
Assistant Professors—  
Lavoie Monroe  
Orenstein Wells  
Instructor—  
Lesniak

### Division of Nephrology

Professors—  
Oken Schoolwerth (Division Chair)  
Stacy  
Associate Professors—  
Feldman Kirschbaum  
Assistant Professors—  
Bell Betcher  
Duran-Guerraty Gehr

Katz  
Quigg  
Research Assistant Professor—  
Drewnowska  
Instructor—  
Ripley

King

### Division of Pulmonary Diseases

Professors—  
Cooper (Acting Chair) Fairman  
Glauser  
Associate Professors—  
Bechard Fowler  
Polatty Sessler  
Associate Clinical Professor—  
McGehee  
Assistant Professors—  
McPherson Moses  
Research Assistant Professor—  
Fisher

### Division of Substance Abuse Medicine

Professor—  
Schnoll (Division Chair)  
Associate Professor—  
Horvatic  
Research Associate Professor—  
Britt  
Assistant Professors—  
Karan Terpstra  
Clinical Instructor—  
Poindexter

### DEPARTMENT OF LEGAL MEDICINE

Professor—  
Fierro (Chair)  
Associate Professor—  
Swisher  
Assistant Professor—  
Ross  
Lecturers—  
Beyer Brewbaker  
Crews Dunn, S. H.  
Handcock Massello  
Oxley Page  
Presswalla Russell  
Sartoris Thornhill

### DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY

Professors—  
Macrina (Chair) Adler (Medicine)<sup>1</sup>  
Archer (Medicine)<sup>1</sup> Bradley  
Coleman Conrad  
Dalton (Pathology)<sup>1</sup> Hylemon  
Loria Markowitz (Medicine)<sup>1</sup>  
Regelson (Medicine)<sup>1</sup> Ruddy (Medicine)<sup>1</sup>  
Schenkein (Periodontics)<sup>1</sup> Schwartz (Medicine)<sup>1</sup>  
Tew  
Affiliate Professors—  
Roberts Tinnell  
Associate Professors—  
Bear (Surgery)<sup>1</sup> Buck  
Burns (Oral Pathology)<sup>1</sup> Cabral

Christie  
Gates (Biology)<sup>1</sup>  
Holmes  
Hsu  
Koertge (Periodontics)<sup>1</sup>  
Mikkelsen (Radiation  
Oncology)<sup>1</sup>  
Westin (Medicine)<sup>1</sup>  
Formica  
Hard (Pathology)<sup>1</sup>  
Huff  
Jacobson (Medicine)<sup>1</sup>  
Marciano-Cabral  
O'Neal  
Povirk (Pharmacology and  
Toxicology)<sup>1</sup>  
Affiliate Associate Professor—  
Monaco  
Assistant Professors—  
Barbour  
Krystal (Medicine)<sup>1</sup>  
McCoy  
Rosenkrantz  
Swerdlow (Medicine)<sup>1</sup>  
Yager (Surgery)<sup>1</sup>  
Affiliate Assistant Professors—  
Burton  
Emery  
Whiteman  
Califano (Periodontics)<sup>1</sup>  
Lebman  
Munro (Nursing)  
Sung (Radiation Oncology)<sup>1</sup>  
Valerie (Radiation Oncology)<sup>1</sup>  
Carlson  
Temple-Rosebrook  
Zwierzynski

### DEPARTMENT OF NEUROLOGY

Professors—  
DeLorenzo (Chair) Astruc  
Garnett Harbison  
Henry Leshner  
Myer Pellock  
Suter, C. G. Yu  
Clinical Professors—  
McGee Rennie  
Richards  
Associate Professors:—  
Calabrese Campbell  
Corrie Costanzo  
Jakoi Taylor, J.  
Associate Clinical Professors—  
Harrelson McGee  
Assistant Professors—  
Bell Boggs  
Coulter Felton  
Hart Jaitly  
MacLaughlin Pridgeon  
Shapiro Sombati  
Towne Wingkun  
Assistant Clinical Professors—  
Brush Cohen, R.  
Harris, J. K. Harris, W. O.  
Hennessey Isaacs  
O'Bannon Paschall

### Division of Neuro-Ophthalmology

Professors—  
Harbison (Division Chair) Astruc  
Assistant Professor—  
Felton

### Division of Neurophysiology

Professor—  
Delorenzo (Division Chair)  
Associate Professor—  
Corrie  
Assistant Professors—  
Jaitly Wingkun

<sup>1</sup>Department in parentheses indicates primary appointment.

**Division of Child Neurology**

Professors—  
 Myer (Division Chair) Leshner  
 Pellock  
 Assistant Professor—  
 Shapiro

**DEPARTMENT OF OBSTETRICS AND GYNECOLOGY**

Professors—  
 Dunn (Chair) Board  
 Brown Fantl  
 Goplerud Hurt  
 Seeds Soper  
 Walsh  
 Clinical Professors—  
 Mann Petres  
 Schulman  
 Associate Professors—  
 Bennett Bodurtha  
 Brock Collins  
 Dahmus Dinsmoor  
 Kauma Matt  
 Nestler Peng  
 Richards West  
 Associate Clinical Professors—  
 Claiborne Cohen  
 Cornell Sayegh  
 Assistant Professors—  
 Bodurtha Borzelleca  
 Elser Girerd  
 Jackson-Cook Klein  
 Kornstein Segreti  
 Vandermolen  
 Assistant Clinical Professors—  
 Adkins Feore  
 Fitzhugh Gregg  
 Jarrell Maraist  
 Rowe Ware  
 Williams, L. H. Zimberg  
 Instructor—  
 Hutcheson  
 Clinical Instructors—  
 Battista Blanto  
 Broocker Dassow  
 Eads Gianfortoni  
 Goodman Gutliph  
 Hamilton Hirata  
 Johnson Jones  
 Kegel Kern  
 Knapp MacIvor  
 Maizels McGhee  
 Minor Montague  
 Moore Partridge  
 Rabhan Rinehardt  
 Salyer Schoeffler  
 Shaughnessy Steingold  
 Wilbanks Zedler

**DEPARTMENT OF OPHTHALMOLOGY**

Professors—  
 Ferry (Chair) Weinberg  
 Associate Professor—  
 Carney  
 Assistant Professor—  
 Benson

**DEPARTMENT OF ORTHOPAEDIC SURGERY**

Professors—  
 Cardea (Chair) Adelaar  
 Associate Professors—  
 Loughran Nogi  
 Zuelzer  
 Assistant Professors—  
 Carr, J. Patterson  
 Wayne, J.

**DEPARTMENT OF OTOLARYNGOLOGY**

Professors—  
 Williams, G. H. (Chair) Fable, M.  
 Hasenstab Lenhardt  
 Nance Sismanis  
 Associate Professors—  
 Ali Butts  
 King, M.  
 Associate Clinical Professors—  
 Creech Shim  
 Assistant Professors—  
 DePanicis Dinardo  
 Godin Wohl  
 Assistant Clinical Professors—  
 Atiyeh Dalton  
 Gaskins Giordano  
 Middleton Shaia  
 Clinical Instructors—  
 Clarke Hayden  
 Hickman Kreisler  
 Wilkes

**DEPARTMENT OF PATHOLOGY**

Professors—  
 Wilkinson (Chair) Abbey  
 Dalton Draper, D.  
 Duma Ferry  
 Fisher Fable, W.  
 Gander Garrett, C.  
 Gerszten Ghatak  
 Hadfield Hossaini  
 James, G. W., III Kohout-Dutz  
 McPherson Miller, W. G.  
 Moore Patterson, J. W.  
 Rosenblum Schwartz, L. B.  
 Scott, R. B. Shadomy, H. J.  
 Shiel Sirica  
 Clinical Professors—  
 Carroll McMullan, F.  
 Thornton  
 Associate Professors—  
 Ben-Ezra Burns  
 Hard Loria  
 Mills Mohanty  
 Moncure Page  
 Poklis Rodriguez  
 Svirsky Ware  
 Associate Clinical Professors—  
 Beck Briere  
 Cook, S. Hershberg  
 Kramer Lambert  
 Nottebart  
 Assistant Professors—  
 Burks Carr  
 Clark Coudron



Farris	Fowler
Grimes	Harris
Kornstein, M.	Lehman, C.
Perr	Saady
Stastny	Todd
Wakely	Weymouth

Assistant Clinical Professors—

Armstrong	Blaine
Buddington	Carpenter
deBlois, G.	Dunn, H.
Freude	Gutierrez
Kipreos	Klimock
Lippman	Lovinger
Pinto	Smith, G. E., Jr.
Thomas, C.	Thomas, G.
Warren	

## DEPARTMENT OF PEDIATRICS

Professors—

Adler	Berman
Brookman	Chan
Draper, D. A.	Fisher
Gutcher	Kendig
Kirkpatrick	Leshner
Marsland	Mickell
Myer, E.	Nance
Ownby	Pellock
Resnick	Roth
Salzberg	Schieken (Interim Chair)
Ward, J.	Wolf
Young	Zanga

Clinical Professors—

Arnold	Massie
Schulman	

Associate Professors—

Campbell	Cockrell
Dunn, N.	Elliott
Graham	Kaplowitz, T.
Liner, S.	Lofland
Moskowitz	Mueller
Rizzo	Robertson
Rodriguez	Russell
Sonnino, R.	Tipton, G.
Wakely, P.	Wilson, C.

Associate Clinical Professors—

Bright	David
de la Burde	Curry
Dewitt	Dwyer
Hudgens	Rahal
Solomon	Vernon
Weinstein	Wilkerson

Assistant Professors—

Al-Mateen, B.	Al-Mateen, C.
Bar-on	Bodurtha
Bush	Das Narla, L.
Ellis, C.	Gullquist, S.
Hazra	Heckle
Hinsbergen	Irani
Kerkering	Kernitsky, L.
Koch	Lifshutz
Markello, T.	Massey
Mellis	Meloy
Metz	Pandya, A.
Pellock	Rozycki
Scheinman, J.	Shapiro
Snead	Smith-Harrison
Sonenklar	Spottswood, S.
Sreedhar, S.	Taylor, D.

TurnerWhite, S.	Wingkun, J.
Willis, D.	Wohl
Wood	Wortham, E.
Young	

Assistant Clinical Professors—

Albrecht	Andrews
Arkin	Austin, L. A.
Blumberg	Bones
Burch	Caldronney
Campbell, M.	Colley
Davidow	Fidler
Gewanter	Hanzel
Herman	Hunt
Jaffee	Jaworski
Johnson, L.	Johnston
Megson, M.	Kannan
Kellett	Kessel
Kirchmier	Kraft
Leverty	Mistr
Mollen	Moore, F. P.
Overton	Payne
Pinkerton	Prince
Radcliffe	Reams, P.
Robinson	Sakhadeo, S.
Saunders	Terry
Tipton	Wells
Wiley	Wurtsbaugh

Instructors—

Foster, R.	Marcello, D.
------------	--------------

Clinical Instructors—

Abernathy	Andrako, J. D.
Barringer	Bell
Boatwright	Bokhari
Brennan	Campbell
Kern	King, A.
Kraft, C.	Kuperminc
Lee, R. M.	Lum
Mahoney	Mohagheghi
Morris	Meyer, M.
Sardenga, K.	Shayne
Shreve	Stephens
Stokes, C.	

## Division of Adolescent Medicine

Professor—  
Brookman (Division Chair)

## Division of Pediatric Rehabilitation

Professor—  
Ownby (Division Chair)

Associate Professor—  
Cockrell

## Division of Community Pediatrics

Professors—  
Kirkpatrick (Division Chair)

Kendig

## Division of General Pediatrics and Emergency Care

Professors—  
Zanga (Division Chair)

Associate Professors—  
Liner

Assistant Professors—  
Bar-on

Draper	Tipton
Ellis	McConaughy

Meloy  
Instructors—  
Marcello

Polanshek  
Foster

### Division of Neonatal-Perinatal Medicine

Professor—  
Gutcher (Division Chair)  
Associate Professor—  
Mueller  
Assistant Professors—  
Al-Mateen  
Lifshutz  
Snidow

Kerkering  
Rozycki  
Wingkun

### Division of Pediatric Allergy

Professors—  
Kendig  
Assistant Professor—  
Irani

Rodriguez (Division Chair)

### Division of Pediatric Cardiology

Professors—  
Schieken (Division Chair)  
Associate Professors—  
Moskowitz  
Assistant Professor—  
Gullquist

Robertson

### Division of Pediatric Critical Care Medicine

Professor—  
Mickell (Division Chair)  
Assistant Professors—  
Metz  
White

Sreedhar

### Division of Pediatric Gastroenterology

Professors—  
Berman (Division Chair)

Graham

### Division of Pediatric Genetics, Endocrinology, and Metabolism

Professors—  
Roth (Division Chair)  
Rizzo  
Young, R. B.  
Associate Professors—  
Kaplowitz  
Research Associate Professor—  
Pandya  
Assistant Professors—  
Bodurtha  
Willi

Nance  
Wolf

Markello

### Division of Pediatric Hematology/Oncology

Professor—  
Maurer  
Associate Professors—  
Dunn  
Assistant Professor—  
Hockel

Russell (Division Chair)

Massey

### Division of Pediatric Infectious Diseases

Professor—  
Adler (Division Chair)  
Assistant Professor—  
Koch

Research Assistant Professors—  
Manganello  
McVoy

### Division of Pediatric Nephrology

Professor—  
Chan (Division Chair)  
Associate Professor—  
Scheinman

### Division of Pediatric Pulmonology

Associate Professor—  
Elliott (Division Chair)

## DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY

Professors—  
Kunos, G. (Chair)  
Abraham, D.  
(Medicinal Chemistry)  
Borzelleca, J. F.  
Carter, R. (Biostatistics)  
Dewey, W.  
(Res. and Graduate  
Studies)  
Goldman, I. D. (Medicine)  
Harris, L. S.  
Martin, B. R.  
McAfee, D.  
Munson, A. E.  
Rosecrans, J. A.  
Woods, L. A.

Aceto, M. D.  
Balster, R. L.  
Bradley, S. G. (Microbiology)  
DeLorenzo, R. (Neurology)  
Egle, J. L.  
Ellis, E.  
Freer, R.  
(Biomedical Engineering)  
Lamb, R. G.  
May, E. L.  
Moran, R.  
Patrick, G. A.  
Schnoll, S. (Medicine)

Associate Professors—  
Beardsley, P.  
Grant, S. (Medicine)  
Poklis, A. (Pathology)  
Robinson, S.

Gewirtz, D.  
Holsapple, M.  
Povirk, L.  
Sica, S. (Medicine)

Assistant Professors—  
Abood, M.  
Ishac, E.  
Satin, L.  
Compton, D.  
Knisely, J. (Psychiatry)  
Meade, B.  
Shivachar, A.  
Varga, K.  
Westin, E. (Medicine)

Abd-Elfattah, M. (Surgery)  
Ritter, J.  
Woodward, J.  
Fuchs, B.  
Lichtman, A.  
Seither, R. (Medicine)  
Smith, F.  
Welch, S.

## DEPARTMENT OF PHYSIOLOGY

Distinguished Professor—  
Briggs

Professors—  
Baumgarten  
Boadle-Biber (Chair)  
Costanzo, R.  
Eckberg (Cardiology)<sup>1</sup>  
Ford  
Kalimi  
Mayer (Anesthesiology)<sup>1</sup>  
Pittman  
Price, S.  
Schoolwerth (Medicine)<sup>1</sup>  
Wechsler (Surgery)<sup>1</sup>

Biber, T.  
Cleary  
DeSimone  
Fabiato  
Hess (Medicine)<sup>1</sup>  
Marmarou (Neurosurgery)<sup>1</sup>  
Mikulecky  
Price, D. (Anesthesiology)<sup>1</sup>  
Ridgway  
Walsh (Ob-Gyn)<sup>1</sup>  
Witorsch

Associate Professors—  
Corley  
Costanzo, L.

<sup>1</sup>Department in parentheses indicates primary appointment.

Coulter (Neurology) <sup>1</sup>	Feher
Feldman (Medicine) <sup>1</sup>	Fine (Biology) <sup>1</sup>
Grider	Jakoi (Neurology) <sup>1</sup>
Meredith (Anatomy) <sup>1</sup>	Poland
Stewart (Biology) <sup>1</sup>	
Assistant Professors—	
Clemo (Medicine) <sup>1</sup>	Dilts
Heck	Karnam
Kukreja (Medicine) <sup>1</sup>	Liu
Lyall	Satin (Pharmacology) <sup>1</sup>

## DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION

Professors—	
Mellette	Wehman
Clinical Professor—	
Park	
Associate Professors—	
Rucker (Chair)	LaFratta
Lamb	Kreutzer
Assistant Professors—	
Bonner	Carruth
Cifu	Cyr
Gervasio	Green
Gudas	McKinley
Midha	Oppenheim
Rowland	Vancouver
Walker	Williams
Wilson	Wooten
Clinical Instructors—	
Decker	Jena

## DEPARTMENT OF PREVENTIVE MEDICINE AND COMMUNITY HEALTH

Professor—	
Lanier (Chair)	Barker
Brandt	Kilpatrick
Wan	
Clinical Professors—	
Banks	Buttery
Clinton	Dandoy
Associate Professors—	
Cooper	Mazmanian
Peeples	Smith
Vance	
Associate Clinical Professors—	
Armstrong	Baffi
Brown	Redican
Stroube	Turf
Tweel	
Assistant Professor—	
Willis	
Clinical Assistant Professors—	
Clement	Ibrahim
Clinical Instructors—	
Nelson	Walker

## DEPARTMENT OF PSYCHIATRY

Professors—	
Silverman (Chair)	Cohen
Eaves	Falck
Harkins	Hart
Kendler	Levenson
MacLean	Resnick
Schnoll	Singh

Vieweg	
Clinical Professors—	
Brown	Corcoran
Foster, M.	Friedel
Gerber	Goldberg
Lindemann	McDonough
Rubin	Russell
Shenoy	Silberman
Williams	
Associate Professors—	
Barker	Best
Boon	Corazzini
Culbert	Haller
Heilbrun	Kaplan
McCullough	Mishra
Morin	Neale
Olbrisch	Pandurangi
Parmelee	Riley
Snead	Thomas
Urbach	Wade
Weber	
Associate Clinical Professors—	
Buxton	Camp
Draper	Ettigi
Forssmann-Falck	Friedenberg
Gomez	Green
Hauser	Holland
Joseph	Joseph, A.
Julius	Kowler
Master	McLaughlin
Nelson	Peed
Schumann	Shield
Walker	Zaller
Assistant Professors—	
Adityanjee	Atri
Al-Mateen	Baskett
Blatecky	Blum
Bullock	Brink
Brunk	Burke
Chioco	Christian
Churchill	Cole
Corretjer	Davidson
Dougherty	Ellis
Foster, W.	Gilliam
Horvatic	Ingersoll
Joseph, M.	Karan
Klinger	Knisely
Kornstein, S.	Kruczek
Leffler	Lewis
Mattocks	McCormick
McKenzie	Nelson
Osran	Oswald
Parham	Pelonero
Presberg	Prescott
Reid	Reilly
Saltzberg	Shires
Sholar	Sonenklar
Sood, A.	Sood, R.
Straub	Stauffer
Terraciano	Theogaraj
Winfrey	Wood
Assistant Clinical Professors—	
Armstrong	Berg
Berman	Bick
Blackburn	Blackmer
Bloomfield	Boettcher
Bowen	Bram

<sup>1</sup>Department in parentheses indicates primary appointment.

Carter	Davis
Deol	Dowdy
Ehrmantraut	Entin
Erfe	Falcon
Ferriss	Fisher
Forbes	Garland
Goodship	Harp
Hulbert	Jenkins
Jennings	Johnson
Jones, K.	Koller
Koshes	Kreider
Kriegman	Little
Lowe	Maghakian
Makarowsky	Marcus
Markowitz	McCall
Montgomery	Nelson, E.
Peck	Petrella
Petry	Pierce
Redjali	Scavullo
Schlobohm	Shelp
Sheneman	Shepard
Sitarz	Smith
Spanier	Tam
Tuason	Tucker
Twente	Wolber
Wouters	
Instructors—	
Adkins	Feuer
Gottlieb	Kurgans
Wiley	
Clinical Instructors—	
Binford	Blackwood
Brooks	Burke
Curtis	Deaton
Dwyer	Fleischer
Foster, H.	Garten
Hadeed	Harrelson
Hopkins	Hudson
Jennings	Johnson
Kernodle	LaGow
Landrum	Loftus
May	McLean, P.
Morris	Olinger
Reif	Sale
Sellman	Singh
Spector	Stone
Torres-Lisboa	Watkins

### Division of Child Psychiatry

Professors—	
Cohen	Singh
Associate Professors—	
Parmalee (Division Chair)	Boon
Snead	
Assistant Professors—	
Al-Mateen	Brunk
Kruczek	Oswald
Parham	Reid
Sood, A	Sonenklar
Wood	
Instructors—	
Cole	Gottlieb
Wiley	

### Division of Clinical Psychology

Professors—  
 Resnick (Division Chair) Hart  
 Associate Professors—

Culbert	Haller
Morin	Olbrisch
Riley	Thomas
Wade	
Assistant Professor—	
Nelson	

### Division of Consultation/Liaison Psychiatry

Professor—  
 Levenson (Division Chair) Hart  
 Associate Professors—  

Culbert	Haller
Morin	Olbrisch
Wade	

 Assistant Professors—  

Kornstein, S.	Nelson
Presberg	

### Division of Ambulatory Care Psychiatry

Associate Professors—  

Mishra	Riley
Thomas	

 Assistant Professors—  
 McCormick (Division Chair)  

Christian	Churchill
Davidson	Kornstein
McKenzie	Sholar

### DEPARTMENT OF RADIATION ONCOLOGY

Professors—  
 Schmidt-Ullrich (Chair)  
 Lin  
 Associate Professors—  

Atari	Johnson
Mikkelsen	Tercilla
Zwicker	

 Associate Clinical Professor—  
 Lundeen  
 Assistant Professors—  

Ali	Arnfield
Arthur	Benedict
Gaballa	Howells
Huang	Kavanagh
Khandelwal	Mustain
Sung	Valerie
White	

 Assistant Clinical Professors—  

Heath	Leal-Quiros
Sinesi	

### DEPARTMENT OF RADIOLOGY

Professors—  

Proto (Chair)	Eisenberg
Fatouros	Fratkin
Hirsch	Neal
Smoker	Tatum
Tisnado	Turner

 Clinical Professors—  

Beachley	Green
vanBreda	

 Associate Professors—  

Blinder	Brewer
Broga	Burke, T.
Floyd	Hayes
Henry	Jolles, H.
Messmer	Montour

Wilson	
Associate Clinical Professors—	
Fields	Howell
Scatarige	Vinik
Assistant Professors—	
Auletta	Austin
Bentley	Bosch
Cole, P.	DeMeo
Elliott	Freedman
Hom	Johnson
Jolles, P.	Kalen
Kraft	Kubal
Kuta	Laine
Lewis	Liu
Narla	Perdikaris
Prasad	Quint
Rowell	Shaw
Spottswood	Szucs
Torres	Wasseen
Wilkinson	Woodlief
Assistant Clinical Professors—	
Bampton	Bredrup
Calkins	Cockrell
Dufour	Faunce
Galston	Girevendulis
Goldschmidt	Grizzard
HughesD.	Jensen
Konerding	LeBolt
Wadsworth	
Instructors—	
Cole, T.	Hingsbergen
Robinson	Rowell
Szucs	
Clinical Instructors—	
Shivel	Spencer, H. S.

### Division of Diagnostic Radiology

Professors—	
Eisenberg	Neal
Proto	Smoker
Tisnado	Turner
Associate Professors—	
Henry (Division Chair)	Blinder
Brewer	Floyd
Hayes	Jolles, H.
Messmer	
Assistant Professors—	
Auletta	Austin
Bentley	Bosch
Cole, P.	DeMeo
Freedman	Hom
Johnson	Kubal
Kuta	Laine
Liu	Narla
Prasad	Rowell
Spottswood	Szucs
Torres	Wasseen
Wilkinson	Wirth
Woodlief	
Instructors—	
Cole, T.	Hingsbergen
Robinson	

### Division of Nuclear Medicine

Professors—	
Fratkin	Hirsch
Tatum (Division Chair)	

Associate Professor—	
Burke	
Assistant Professors—	
Jolles, P.	Quint

### Division of Radiation Physics and Biology

Professor—	
Fatouros (Division Chair)	
Associate Professors—	
Broga	Montour
Wilson	
Assistant Professors—	
Kalen	Kraft
Perdikaris	

### DEPARTMENT OF SURGERY

Professors—	
Wechsler (Chair)	Bagwell
Brooks, J. W.	Campbell
Cohen, I. K.	Gervin, A.
Horsley	Kellum
Koontz	Laskin
Lawrence	Lee, H. M.
Marmarou	McGuire
Muizelaar	Neifeld
Newsome	Salzberg
Smith, M. J. V.	Sugerman
Young, H.	
Clinical Professors—	
Atwill	Coleman, C. C.
Coleman, C. L.	Davis
Gwathmey	Olshansky
Munoz, A.	Zimberg
Associate Professors—	
Abd-Elfattah	Bear
Bullock	Diegelmann
Giglio	Guerraty
Guisto	Hackler
Katz, P. G.	Lutz
Mehrhof	Nogi
Posner	Sobel
Sonnino	Zuelzer
Associate Clinical Professors—	
Banner	Beazley
Bryson	Byrd
Dodson	Gillies
Hill	Kurup
Nevin	Oates
Royster	Talman
Ware, J. L.	
Assistant Professors—	
Abubaker	Broadus
Casey	Damiano
DeMaria	Fisher
Gervin, C.	Gore
Ham	Hibbert
Holloway	Hsia
Lyeth	Maier
Makhoul	Maragh
Moray	Pozez
Salter	Spratt
Strauss	Wornom
Yeager	
Assistant Clinical Professors—	
Anthony	Bosher
Bowers, H.	Brown, P.
Burger	Burke

Carrico, T.	Clary
Darden	Doss
Drummond	Evans, M.
Gayle, W.	Gilliam, F.
Hutcher	Hyslop
James	Kel
Knaysi	Koziol
Larsen	Leibovic
McKain, C.	McKeown, J.
McTamanev	Merritt
Morgan	Petty
Poulos	Rawls
Riley	Robertson
Rowe	Sahni
Selph	Singer
Stalker	Timmerman
Tunner	Whipple
Whitley	Wright
Instructors—	
Godkin	Gould
Hymes	Salai
Saunders	Toth
Winn	Wolfe
Clinical Instructors—	
Atwill	Bates
Bigley	Boone
Bowman	Boyer
Christie	Concodora
Cote	DeWire
Duck	Feminella
Frederick	Gomulka
Goodhart	Graham
Hoefler	Johnson, G.
Ludemun	Melzig
Merchant	Padilla
White, W.	Williams
Wilson, J. K.	

### Division of Cardiac and Thoracic Surgery

Professors—	
Wechsler (Division Chair)	Brooks, J. W.
Associate Professors—	
Abd-Elfattah	Guerraty
Assistant Professors—	
Damiano	Hsia
Salter	Spratt
Instructors—	
Hymes	Salai
Toth	Winn

### Division of Neurological Surgery

Professors—	
Young, H. (Division Chair)	
Marmarou	Muizelaar
Associate Professors—	
Bullock	Lutz
Assistant Professors—	
Broaddus	Holloway
Lyeth	

### Division of Oral and Maxillofacial Surgery

Professors—	
Laskin (Division Chair)	Campbell
Associate Professor—	
Giglio	

Assistant Professors—	
Abubaker	Moray
Strauss	

### Division of Pediatric Surgery

Professors—	
Bagwell (Division Chair)	Salzberg
Associate Professor—	
Sonnino	

### Division of Plastic and Reconstructive Surgery

Professors—	
Cohen, I. K. (Division Chair)	
Diegelmann	
Associate Professor—	
Mehrhof	
Assistant Professors—	
Maragh, H.	Pozez
Wornom	Yeager

### Division of Surgical Oncology

Professors—	
Horsley	Lawrence
Neifeld	
Associate Professor—	
Bear (Interim Division Chair)	

### Division of Trauma and General Surgery

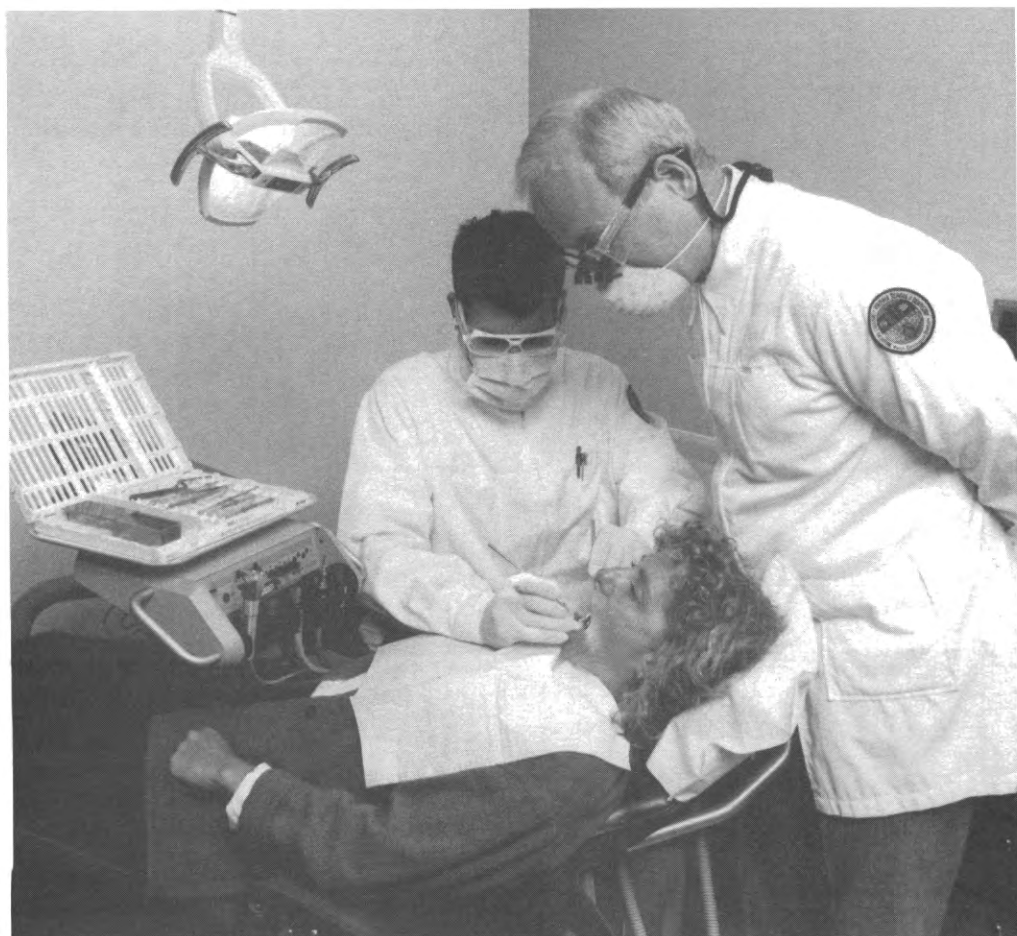
Professors—	
Newsome (Division Chair)	
Gervin, A.	Kellum
McGuire	Sugerman
Associate Professor—	
Guisto	
Assistant Professors—	
DeMaria	Gore
Hibbert	
Instructors—	
Gould	Saunders
Wolfe	

### Division of Vascular and Transplantation Surgery

Professor—	
Lee, H. M. (Division Chair)	
Associate Professors—	
Posner	Sobel
Assistant Professors—	
Fisher	Ham
Makhoul	
Instructor—	
Godkin	

### Division of Urology

Professors—	
Koontz	Nelson (Division Chair)
Smith, M. J. V.	
Associate Professors—	
Hackler	Katz, G.



# PART III

## SCHOOL ▼ OF ▼ DENTISTRY

LINDSAY M. HUNT, JR., D.D.S., Ph.D.  
Dean

JAMES H. REVERE, JR., D.D.S.  
Executive Associate Dean

MARSHALL P. BROWNSTEIN, D.D.S.  
Assistant Dean for Admissions and Student Affairs

THOMAS C. BURKE, B.S.  
Assistant Dean for Development and Continuing Education

BETSY A. HAGAN, D.D.S., M.B.A.  
Assistant Dean for Clinical Affairs

JAMES E. HARDIGAN, Ph.D.  
Assistant Dean for Administrative Affairs

HARVEY A. SCHENKEIN, D.D.S., Ph.D.  
Assistant Dean for Research

**T**he School of Dentistry was created in 1893 when the University College of Medicine opened with a dental department as one of its original divisions. The Medical College of Virginia inaugurated a dental education program in 1897, and in 1913 the two schools were merged to form the MCV School of Dentistry.

The facilities of the School of Dentistry are housed in the Wood Memorial and Lyons Buildings and contain clinical facilities, classrooms, student laboratories, departmental offices, a computer learning laboratory, and closed circuit color television studios with receiver units in laboratories and classrooms.

The school provides opportunities for selected, qualified individuals to study dentistry under the most favorable conditions and in accordance with the standards established by the Commis-

sion on Dental Accreditation of the American Dental Association.

The degree of Doctor of Dental Surgery is awarded to graduates of the school's professional program and the Bachelor of Science degree to graduates of the Division of Dental Hygiene.

### MISSION OF THE SCHOOL OF DENTISTRY

The primary mission of the School of Dentistry is to educate practitioners of dentistry capable of meeting the general oral health care needs of the communities they serve. Within this educational mission is the explicit responsibility to provide future practitioners with the analytical and technological skills which will allow them to be efficient providers of quality oral health care to the public, to be responsive to future changes in the profession, to be lifetime learners, and to advance dental knowledge.

Integral parts of the mission are the responsibility for the school to assume a prominent role in research and other scholarly activity, to provide service and patient care to the community, and to develop leaders in education and organized dentistry. Consistent with the primary mission, the School of Dentistry provides programs in dental specialties, dental hygiene, and continuing education.

### ADMISSION REQUIREMENTS

A minimum of 90 semester hours (or equivalent) in an accredited college or university is required. Required courses are general biology,



general chemistry, organic chemistry, physics, and English. Laboratory experiences are required for those courses where applicable. Biology courses should emphasize zoology rather than botany. Courses in biochemistry, general microbiology, animal physiology, the behavioral sciences, and courses involving psychomotor skills are strongly recommended. Academic credits presented by an applicant must be acceptable for credit toward a degree in the institution in which the courses are taken. Only one of the required courses may be taken during the year application is made. However, accepted students must document completion of required courses and 90 semester credits before registration can occur.

In order to successfully complete the dental curriculum at MCV/VCU, students are required to be able to communicate with faculty, students, staff, and patients. Accordingly applicants may be required to prove their proficiency in American English via standardized tests. An applicant may consider the option of postponing matriculation until such time that he or she can meet these requirements.

Participation in the Dental Admission Test (DAT) of the American Dental Association is required. It is recommended that this test be taken by the year preceding intended matriculation. Applicants are encouraged to take the examination more than one time. The best set of scores is used as the official set.

### Selection Factors

The Medical College of Virginia of Virginia Commonwealth University is a state-supported, public university and gives admission preference to state residents. All applicants are evaluated by uniform criteria without regard to national origin, color, race, age, religion, or sex.

Students are accepted by the Admissions Committee on the basis of excellence of pre dental education, DAT scores, recommendations, and results of personal interviews with members of the committee. The interview process is standardized and designed to determine motivation, knowledge of and interest in the dental profession, and to afford the applicant an opportunity to provide additional information pertaining to his/her application. Selection occurs on a rolling admissions basis, and once the class is complete, an alternate list is created. Members of minority groups underrepresented in dentistry are especially encouraged to apply. Each year a certain number of students who are not accepted into the freshman class are invited to take selected courses

with this class. Their performance in these courses plays a vital role in their being considered for the following year's admissions process.

### Application Procedures

The School of Dentistry participates in the American Association of Dental Schools Application Service (AADSAS). All applicants are required to submit credentials through this service. Application forms can be obtained from AADSAS, 1625 Massachusetts Avenue N.W., Suite 101, Washington, DC 20036, pre dental advisors in colleges and universities, and the Office of Admissions and Student Affairs, School of Dentistry, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980566, Richmond, VA 23298-0566.

Application to the School of Dentistry can be made through AADSAS on or after July 1 and must be received by AADSAS not later than February 15 of the year preceding intended matriculation.

AADSAS compiles academic records and other pertinent information and forwards these with the application to the School of Dentistry. Qualified applicants are then requested to submit supplemental information, such as letters of recommendation, by March 1 of the year in which admission is desired. The application fee is \$35.

Applicants will be notified of decisions according to guidelines established by the American Association of Dental Schools. Within 30 days following notification of acceptance, the applicant is required to deposit \$200 toward tuition for the first year. After February 1, the deposit must be received within two weeks following notification of acceptance. A second deposit of \$100 toward tuition is due on May 1. Both deposits are nonrefundable.

A letter of acceptance offers the candidate a position in the class entering for the session cited. Receipt by the Office of Admissions and Student Affairs of the initial \$200 nonrefundable tuition deposit within the prescribed period reserves the position in the class. Failure to reserve a position results in that position being offered to another candidate. The second \$100 nonrefundable tuition deposit initiates active administrative processing of matriculation into the first-year class. Failure to send this deposit results in loss of position, and the position is then offered to another candidate.

The act of matriculation also implies a willingness on the part of the student to comply with University rules and regulations, to take an interest in maintaining the ideals of the institution, and

to conduct himself/herself in a manner befitting a member of the dental profession.

### **SCHOOL OF DENTISTRY — READMISSION FOLLOWING A HEALTH-RELATED WITHDRAWAL<sup>1</sup>**

Health-related withdrawals will be granted, except in unusual circumstances, for the remaining portion of the academic year in which withdrawal is approved. In no event will withdrawal exceed one academic year.

A student in the School of Dentistry who was granted a health-related withdrawal and fails to notify the dean by the March 1 preceding the academic year in which studies are to be resumed (declaring his/her intent to return to school), ceases to be a student in the School of Dentistry, forfeits the right to return without reapplication, and must reapply through appropriate procedures if readmittance is desired.

First-year students who forfeit must reapply for a freshman class using the AADSAS system and, if admitted, will be considered first-year students with associated rights and responsibilities. Forfeiting students who withdraw from second-, third-, or fourth-year classes must apply in writing for admission with advanced standing according to established procedures.

Students who are readmitted will receive credit for only those courses which have been completed and a final grade rendered prior to withdrawal.

Retention of credit for clinical requirements earned prior to withdrawal will be at the discretion of the appropriate department chairman.

Students whose requests for withdrawal are approved by the dean for nonhealth-related reasons through the Academic Performance Committee must apply for readmission with advanced standing.

### **ADMISSION WITH ADVANCED STANDING**

The School of Dentistry will consider applicants for admission with advanced standing on an individual basis depending upon positions available and qualifications of the applicant.

### **FINANCIAL ASSISTANCE**

A brief description of financial aid based on demonstrated need is contained in Part I of this bulletin. Financial need-based aid programs avail-

able to dentistry students include Health Professions Student Loan, State Dental Practice Scholarship, Virginia Dental Association Student Loan Program, and institutional loans. Further information may be obtained from the Office of Admissions and Student Affairs of the School of Dentistry.

### **HONORS AND AWARDS**

The School of Dentistry presents more than forty awards, honors, and scholarships to students during the academic year. These awards are presented during special school events, including the Fall Convocation, Student Clinic Day, and the Spring Senior Reception. Students who excel in scholarship and leadership may also be eligible for membership in university or school honor societies. In addition, students who meet established criteria may be eligible for scholarships or election to membership in organizations related to dentistry.

**Omnicon Kappa Upsilon** is the national honorary dental society. Each year the society selects those students who, in addition to scholarship, have demonstrated exemplary traits of character and potential qualities of future professional growth and attainments.

**Phi Kappa Phi** is a national honor society which recognizes and encourages superior scholarship. It accepts members from applied and professional fields of study, as well as from letters, arts, sciences, and humanities. The VCU chapter was installed in 1977.

**Alpha Sigma Chi** is an MCV Campus organization which was founded in 1938. It recognizes those individuals who excel in leadership and service to colleagues, school, and the University.

**Sigma Zeta** is an honorary science fraternity which encourages and fosters knowledge of the sciences and recognizes attainment of high scholarship in the sciences. Gamma Chapter was installed at MCV in 1926.

**Alpha Omega Scholarship Award** is presented to the graduating student who has attained the highest scholastic rating for his/her four years of dental study.

**Harry Lyons Merit Scholarship Award** is awarded to the graduating senior dental student who has attained the highest grade point average for his/her four years of dental school.

**A. D. Williams Foundation Award** is an annual stipend made to a student in each class who demonstrates, by virtue of high scholastic attainment and professional performance, unusual promise and ability. Character, motivation, intel-

<sup>1</sup>This policy statement applies to the School of Dentistry and supplements the *University Policy on Health-Related Withdrawals* described in Part I of this bulletin.

lectual curiosity, and realization of the opportunities for intellectual development will be considered in the award, which is made at the end of the academic year.

**O. M. Clough Award** is awarded to a graduating senior dental student for outstanding achievement in restorative dentistry.

**William B. Fitzhugh Scholarship Award** is awarded to an incoming dental student who has demonstrated financial need, preference being given to students who have demonstrated athletic abilities at their undergraduate institution.

**R. Ashton Gay and Henry F. Vaughan Scholarship** is awarded to a student who was a Virginia resident at application to the MCV/VCU School of Dentistry, demonstrates academic excellence and leadership during the D-1 year, and has demonstrable need of financial assistance at the beginning of the D-2 year.

**Edmond T. Glenn Award** is awarded on the basis of financial need to a student ranked in the upper half of the class at the end of the D-3 year and who has been involved in school/class activities.

**International College of Dentists Award** is presented to the graduating dental student who has shown the most professional growth and development during his/her years of dental study.

**Robert M. Saunders Scholarship** is awarded to a third- or fourth-year, Virginia resident, predoctoral dental student with excellent academic credentials.

**Pierre Fauchard Academy** presents an award to the graduating dental student who has exhibited leadership qualities and through his/her accomplishments has demonstrated dedication to the advancement of dental literature.

**The Richmond Dental Study Club Memorial Endowment Scholarship** is awarded annually to a D-3 (Junior) dental student based on his/her having a grade point average in the top 25% of the class and demonstrating exceptional leadership and participation in school and/or community extra-curricular activities at the end of the D-2 (Sophomore) year.

## CURRICULUM LEADING TO THE D.D.S. DEGREE<sup>2</sup>

The curriculum in the dental school is organized into a four-year program leading to the

Doctor of Dental Surgery (D.D.S.) degree. The academic year begins in June and extends through May. The program emphasizes study in three broad areas: basic sciences, clinical sciences, and social sciences.

The basic sciences include in-depth study of anatomy, biochemistry, genetics, microbiology, pathology, pharmacology, and physiology.

The clinical sciences prepare the student for the actual practice of dentistry and provide exposure to the various specialties in dentistry.

The behavioral sciences cover such topics as dental health needs, the system of health care delivery, practice management, professional ethics, and behavioral factors.

Laboratory and clinical experiences are offered throughout the four years to develop within the student the skills vital to the practice of general dentistry.

## CURRICULUM

<b>Freshman, First Semester</b>	<i>Credits</i>
ANA 501 Gross Anatomy .....	9.5
ANA 503 Neuroanatomy .....	1.5
BIC 501 Biochemistry .....	5.0
DEN 510 Scientific Inquiry .....	1.0
DEN 511 Dentistry and Education .....	0.5
GEN 531 Dental Genetics .....	2.0
GEP 501 Introduction to Preventive Dentistry .....	0.5
GEP 510 Dental Materials .....	2.5
GEP 511 Dental Anatomy .....	2.5
GEP 514 Fundamentals of Occlusion .....	3.0
<b>Freshman, Second Semester</b>	
ANA 502 Microscopic Anatomy .....	6.0
GEP 512 Operative Dentistry .....	6.5
MIC 513 Microbiology—Infections and Immunity .....	5.5
PIO 502 Mammalian Physiology .....	5.0
<b>Sophomore, First Semester</b>	
DEN 601 Patient Management .....	0.5
DEN 621 Occlusion .....	2.0
GEP 620 Cariology .....	3.0
GEP 621 Operative Dentistry .....	3.0
ORP 621 Dental Radiology .....	0.5
ORT 623 Orthodontics .....	*
PAT 601 General Pathology .....	6.0
PED 622 Introduction to Pediatric Dentistry .....	*
PER 621 Periodontal Anatomy and Pathology .....	2.0
PMC 609 Pharmacology and Pain Control .....	*
PRS 622 Preclinical Fixed Prosthodontics .....	*
PRS 623 Preclinical Complete Denture Prosthodontics .....	*
<b>Sophomore, Second Semester</b>	
END 622 Principles of Endodontics .....	2.5
ORP 622 Oral Pathology .....	2.5
ORS 622 Introduction to Oral Surgery .....	1.0
ORT 623 Orthodontics .....	2.0
PED 622 Introduction to Pediatric Dentistry .....	2.5
PER 622 Diagnostic Periodontics .....	2.0
PER 633 Periodontal Therapy I .....	1.5
PMC 609 Pharmacology and Pain Control .....	4.0
PRS 622 Preclinical Fixed Prosthodontics .....	8.5

<sup>2</sup>In general, courses offered as part of the curriculum in dentistry are not available to other students in the University. Exceptions may be granted by the dean, School of Dentistry, to students enrolled in graduate degree programs upon written request of the chair of the department in which the student is seeking a degree.

PRS 623 Preclinical Complete Denture Prosthodontics .....	6.0
PRS 624 Preclinical Removable Prosthodontics .....	4.0
<b>Junior, First Semester</b>	
END 731 Endodontic Therapy .....	1.0
END 739 Clinical Endodontics 3 .....	*
GEP 739 Clinical Operative 3 .....	*
GEP 745 Clinical Principles of Restorative Dentistry .....	1.0
ORP 737 Radiology Rotation .....	*
ORS 731 Physical Evaluation and Principles of Medicine .....	2.0
ORS 733 Oral Surgery II .....	*
ORS 739 Clinical Oral Surgery 3 .....	*
ORT 739 Clinical Orthodontics 3 .....	**
PED 733 Advanced Pediatric Dentistry .....	*
PED 739 Clinical Pediatric Dentistry 3 .....	*
PER 733 Periodontal Therapy .....	1.0
PER 739 Clinical Periodontics 3 .....	*
PMC 611 Pharmacology and Pain Control .....	2.0
PRS 737 Prosthodontics Diagnosis and Treatment Planning .....	1.0
PRS 739 Clinical Removable Prosthodontics 3 .....	*
PRS 739 Clinical Fixed Prosthodontics 3 .....	*
<b>Junior, Second Semester</b>	
DEN 735 Records Management .....	0.5
END 739 Clinical Endodontics 3 .....	1.5
GEP 739 Clinical Operative 3 .....	5.0
ORP 732 Clinical Oral Pathology and Oral Medicine .....	1.0
ORP 737 Radiology Rotation .....	1.5
ORS 733 Oral Surgery II .....	2.0
ORS 735 Medical Emergencies .....	1.0
ORS 739 Clinical Oral Surgery 3 .....	1.5
ORT 733 Orthodontic Therapy .....	1.0
ORT 739 Clinical Orthodontics 3 .....	**
PED 733 Advanced Pediatric Dentistry .....	2.0
PED 739 Clinical Pediatric Dentistry 3 .....	1.5
PER 739 Clinical Periodontics 3 .....	5.0
PRS 731 Complete Denture Prosthodontics .....	1.0
PRS 735 Removable Partial Denture—Lecture .....	2.0
PRS 739 Clinical Removable Prosthodontics 3 .....	1.5
PRS 739 Clinical Fixed Prosthodontics 3 .....	2.0
<b>Senior, First Semester</b>	
END 749 Clinical Endodontics 4 .....	*
GEP 741 Practice Administration .....	3.0
GEP 743 Clinical Module .....	*
GEP 747 Dental Assistant Utilization Rotation .....	*
GEP 749 Clinical Operative 4 .....	*
ORP 741 Oncology .....	0.5
ORP 747 Emergency Service .....	*
ORS 741 Special Patient Care .....	1.0
ORS 749 Clinical Oral Surgery 4 .....	*
ORT 749 Clinical Orthodontics 4 .....	1.5
PED 749 Clinical Pediatric Dentistry 4 .....	*
PER 749 Clinical Periodontics 4 .....	*
PRS 742 Implantology .....	1.0
PRS 754 Principles of Prosthodontics .....	1.0
PRS 749 Clinical Removable Prosthodontics 4 .....	*
PRS 749 Clinical Fixed Prosthodontics 4 .....	*
<b>Senior, Second Semester</b>	
DEN 741 Head and Neck Pain .....	1.0
DEN 745 Records Management .....	0.5
END 749 Clinical Endodontics 4 .....	1.5
GEP 743 Clinical Module .....	6.0
GEP 747 Dental Assistant Utilization Rotation .....	1.0
GEP 749 Clinical Operative 4 .....	4.0

ORP 749 Emergency Service .....	1.5
ORS 749 Clinical Oral Surgery 4 .....	2.0
PED 749 Clinical Pediatric Dentistry 4 .....	2.0
PER 749 Clinical Periodontics 4 .....	4.0
PRS 749 Clinical Removable Prosthodontics 4 .....	6.0
PRS 749 Clinical Fixed Prosthodontics 4 .....	6.0

\*Continues second semester.

\*\*Continues senior year.

## ACADEMIC PERFORMANCE GUIDELINES

The faculty of the MCV/VCU School of Dentistry has the responsibility for evaluating the student's academic performance. It is incumbent on the course directors or their designees to specify, at the time that courses first convene, the criteria to be used in student assessment and the standards by which they will be judged.

The Guidelines which govern the actions of the Academic Performance Committee and which guide the academic activities of the students are distributed to all students at the beginning of their studies. They are available upon request from the Office of Academic Affairs, School of Dentistry.

## OFFICE OF CONTINUING EDUCATION

THOMAS C. BURKE, B.S.

Assistant Dean for Development and Continuing Education

For every professional person who serves the health sciences, education must be a lifetime process.

Graduation from dental school is the beginning of a continuous educational experience for the serious, conscientious student of dentistry. Regardless of how well prepared a health professional may be at the time of graduation, the adequate knowledge of yesterday is often insufficient information for today and tomorrow. With the rapid advancements made in dental technology and techniques, the professional must constantly seek new knowledge if the health care provider is to improve the health care given patients.

Although the majority of continuing education courses are presented at the School of Dentistry, some offerings are given in other locations. The courses, which vary in length from one day to five days, are scheduled throughout the year and consist of a variety of instructional methods—from didactic and television presentations to the individual's participation in clinical procedures.

The instructional staff for the program offerings is comprised of educators from the MCV/VCU School of Dentistry, guest lecturers from other dental schools, and members of the dental

profession and related professions from the United States and other countries.

### ADVANCED DENTAL EDUCATION PROGRAMS

The School of Dentistry provides advanced dental education programs in the dental specialty areas of endodontics, oral and maxillofacial surgery, orthodontics, pedodontics, periodontics, prosthodontics, general practice residency (GPR) and advanced education in general dentistry (AEGD). Satisfactory completion of the program leads to the award of a certificate of training, certifying eligibility for examination by the appropriate specialty board. All programs are accredited by the Commission on Dental Accreditation of the American Dental Association. A program also is offered for post-graduate training in anesthesiology for dentistry. Those enrolled in the advanced education programs are full-time resident trainees, considered to be the equivalent of full-time students. Under special circumstances, trainees may be accepted into some programs on a part-time basis.

Applications for admission should be directed to the director of the desired program, School of Dentistry, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980566, Richmond, VA 23298-0566.

#### Advanced Education in General Dentistry

CHARLES F. MASSLER, D.D.S., M.Ed.

Program Director

The purpose of the 12-month postdoctoral training program is to provide advanced education and clinical experience to prepare recent graduates for a career in the general practice of dentistry. Upon completion of the program, dentist-trainees will be prepared to practice comprehensive primary care general dentistry in both a community and hospital setting. Graduates of this program will have attained added competence and confidence in all areas of dental care, practice management and professional responsibility. Further, this program provides trainees with meaningful experiences in delivery of care to underserved populations and people at high risk for dental disease. A strong affiliation exists between the School of Dentistry and the newly formed Statewide Virginia Area Health Education Center (AHEC), whose mission is to increase primary health care in underserved areas. *The AEGD program works in concert with AHEC to deliver dental care and recruit/train minority*

health care providers from health professional shortage areas. Further, the dental school is nearing completion of funding for a mobile dental van, which will add a unique aspect to the training provided in the proposed program.

The School of Dentistry is committed to post-graduate education. We currently offer fully accredited postdoctoral training in all clinical specialties and a general practice residency (GPR). Speciality support is available for the AEGD. To support the AEGD clinic there exists a state-of-the-art instrument management system. The hospital-based GPR program is an important asset of the AEGD program. Trainees will receive experience treating patients with AIDS/HIV+ or ARC, and other medically compromised patients. Coupled with the multidisciplinary experience provided at the Extended Geriatric Care facility at McGuire Veterans Administration Hospital, the trainees will receive significant hands-on experience with diagnostic and therapeutic care of special patient populations in addition to extensive training in the art and science of general dentistry. AEGD residents will be expected to participate in off-site clinical experiences outside the city of Richmond, Virginia. Funds will be provided for travel and lodging when required.

**Eligibility and Selection:** Dentists with the following qualification are eligible to enter the AEGD program:

1. Dental graduates from institutions in the U.S. accredited by the Commission on Dental Accreditation of the American Dental Association.
2. Graduates of foreign dental schools who possess equivalent educational background and standings, have passed Parts I and II of the National Board Examination, and have a license to practice dentistry in Virginia.

A maximum of five trainees will be selected. Selection criteria include: didactic and clinical achievements, extramural experience, interpersonal skills, and a demonstrated commitment to pursue a career in general dentistry. Every effort is made to recruit qualified applications from minority dentists and dentists from health professional shortage areas or dentists who profess a desire to serve in these areas. A selection committee consisting of the program director, assistant program director, members from specialty areas, and the Chair of the Department of General Practice will screen all applications. Using the above mentioned selection criteria, the most promising applicants will be invited for personal interviews. Five trainees and two alternates will be

selected. This program participates in the Postdoctoral Dental Matching Program.

### **Endodontics**

**R. NEIL DODDS, D.D.S.**

Program Director

The advanced education program in endodontics is designed to educate qualified individuals to pursue careers as teachers, researchers in the biological sciences, and practicing specialists of endodontics.

The basic 24-month certificate program is composed of two interrelated phases. The first consists of lecture courses which provide the student with a firm biological basis for patient care. The second phase consists of lectures, seminars, and clinical training which is designed to produce clinical proficiency. Research experience is gained through the completion of an individual research project. The entire program conforms to guidelines established by the American Board of Endodontics and the Education Committee of the American Association of Endodontics, and the Commission on Dental Accreditation of the American Dental Association.

Since the major emphasis of the program is on teaching and research, students have the option, within an expanded time frame, to seek advanced degrees (M.S. or Ph.D.). The curriculum is designed on an individual basis by the basic sciences advisor and the director of post-graduate endodontics.

### **Oral and Maxillofacial Surgery**

**ROBERT A. STRAUSS, D.D.S.**

Program Director

The oral and maxillofacial surgery program is designed to provide extensive didactic and clinical experience in all aspects of the specialty. Those who complete the four years of training satisfactorily fulfill the prerequisites for examination and certification by the American Board of Oral and Maxillofacial Surgery.

The didactic portion of the program includes formal courses in oral pathology, anatomy, and physical diagnosis, as well as numerous weekly conferences and seminars. Clinical rotations on oral pathology, anesthesia, medicine, surgical oncology, neurosurgery, cardiology, plastic surgery, emergency room, and the trauma services are used to supplement the trainee's surgical experience. Throughout the program there is a constant correlation of the clinical experience

with the biomedical sciences.

Through the multiple clinical and didactic facilities of the MCV/VCU medical center complex, the McGuire Veterans Affairs Medical Center, and St. Mary's and the Richmond Eye and Ear Hospitals, there is ample material for education in the latest oral and maxillofacial surgical techniques. The oral and maxillofacial surgery service is responsible for diagnosis and management of diseases and injuries related to the oral and facial region. Trainees are involved in all aspects of treatment including simple and complicated oral surgery, anesthesia and pain control, oral and maxillofacial trauma, preprosthetic surgery, orthognathic surgery, head and neck pathology, oral and maxillofacial reconstruction, temporomandibular joint surgery, and microneural and microvascular surgery. During the four years, the trainee assumes ever-increasing responsibilities as time and abilities dictate.

Upon satisfactory completion of the four-year residency, the trainee may earn the Doctor of Medicine degree from the School of Medicine by enrolling in the second and third years of that curriculum. This is followed by a one-year residency in general surgery at MCV Hospitals to complete the combined program.

### **Orthodontics**

**ROBERT ISAACSON, D.D.S., M.S., Ph.D.**

Program Director

Virginia Commonwealth University, Medical College of Virginia, School of Dentistry offers this 24-month advanced education program in orthodontics through the Department of Orthodontics. The program utilizes state-of-the-art clinical care in orthodontics in an environment modeled after private orthodontic practice. The curriculum is composed of seminars and small group instruction with emphasis on critical thinking and problem solving. Contemporary orthodontic treatment is reviewed for substantive and scientific content. Also included are regular orthognathic surgery conferences and interactions with other dental and medical specialties. The successful completion of a research project is a requirement of the program.

Completion of the program and eligibility for the limited practice of orthodontics is certified by the faculty in orthodontics. The program makes the student educationally qualified to take the written portion of the American Board of Orthodontics, which is required for completion of the program.

Students do not qualify for loans, but can defer present student loans. One thousand dollars per year is currently available for each of the two years of the program (to be used toward travel to the American and Virginia Associations of Orthodontists' annual meetings). No tuition is charged except for one basic science course which does require tuition and university registration.

A graduate program, requiring additional time to complete, is also available for students that have been accepted into the two-year program. This program leads to a certificate in orthodontics and a Master of Science degree in a basic health science. The curriculum is designed for each individual by the Department of Orthodontics and the School of Medicine department concerned.

### **Pediatric Dentistry**

ARTHUR P. MOURINO, D.D.S., M.S.D.

Program Director

The advanced dental education program in pediatric dentistry is a 24-month program designed to meet the guidelines of the American Academy of Pediatric Dentistry and the requirements of the Commission on Accreditation of the American Dental Association. It is a combined university- and hospital-based postgraduate program leading to a certificate of advanced training in pediatric dentistry. In addition, a combined program leading to an M.S. or Ph.D. degree with a clinical specialty in pediatric dentistry is available for interested and qualified individuals.

Emphasis is placed on a diversified educational experience. Teaching and research opportunities supplement the clinical, hospital, and didactic components of the program. The course of study includes clinical experience in the treatment of handicapped as well as normal children, pediatric and hospital rotations, and comprehensive dental care with the aid of general anesthesia. Seminars and formal courses are held in pediatric dentistry and orthodontic diagnosis and treatment planning, growth and development, cephalometric analysis, oral pathology, principles of pediatrics, pharmacology, anesthesiology, head and neck anatomy, learning disorders, basic science, and clinical core courses. Elective courses are available within the university and the School of Dentistry.

### **Periodontics**

THOMAS C. WALDROP, D.D.S., M.S.

Program Director

The advanced education program in periodontics consists of a 36-month curriculum

leading to a certificate of training in periodontics. The curriculum includes courses in the basic sciences plus seminars, lectures, and clinics. All provide opportunities for concentrated learning and experience in the clinical specialty of periodontics as well as interaction with interrelated areas of general dentistry and other clinical specialties. The philosophy of the program requires that the student develop capacity for judgment and adaptability from knowledge of basic science and reliance on evaluation of published reports.

Emphasis is further placed on the most current clinical advances in implantology, as well as regenerative procedures. Conscious sedation training and hospital services are practiced. Research activities which lead to publication are required.

For trainees interested in pursuing academic careers, the program may be expanded to include research experience or combined with an M.S. or Ph.D. degree in a basic health sciences program offered by the School of Medicine. The curriculum for the combined residency/degree program is individualized, building upon the requirements for the residency in the basic science department of interest. Combined programs require a minimum of 48 months for completion of requirements for the M.S. degree and a minimum of 60 months for the Ph.D. degree.

### **Prosthodontics**

JOHN W. UNGER, D.D.S., F.A.C.P.

Program Director

The School of Dentistry offers a 24-month program in prosthodontics. Prosthodontics is that specialty of dentistry which endeavors to repair and/or replace the function of the lost or damaged natural dentition. The curriculum combines didactic and clinical instruction in the biology, biomaterials, and clinical application of prosthodontic principles. Teaching is by formal classroom instruction, seminar, and clinical practice. A basic science core curriculum provides instruction in basic human sciences. Prosthodontic instruction is accomplished by seminars and one-on-one clinical instruction. The student is expected to be able to utilize the resources of the medical library in development of seminars and to lead topic-based reviews of the literature. Classes, seminars, and literature review sessions are held weekly during the fall and spring semesters. Clinical instruction is provided year-round. The program follows the School of Dentistry calendar except for the starting date, which is the first weekday in July.

The program is not entirely based upon specific requirements, though certain levels of accomplishment are expected. Didactic requirements are based on performance, attendance, and examination. No grade lower than "C" is acceptable from any basic science course. Prosthodontic instruction includes: fixed, full and partial dentures; removable, complete, and partial dentures; maxillofacial prosthodontics and prosthodontic laboratory procedures; the utilization of implants to support prostheses; and fully adjustable instrumentation, generated path, masticatory dysfunction, and occlusion.

Each student is required to propose, perform, and report on a research topic of choice. Research topics will be submitted, reviewed, and approved by a committee of faculty. Funding is available for the project demands.

The program also requires that students engage in teaching undergraduate dental students.

### **General Practice Residency**

**C. DANIEL DENT, D.D.S.**

Program Director

The School of Dentistry and the Veterans Affairs Medical Center offer a one- and two-year residency in the general practice of dentistry. The program is designed to provide the new dentist with the experience and skills needed for the total care of the dental patient. Such patients include those requiring adjunct medical support services, those suffering from a variety of medical conditions, and those who are at particularly high risk for infection.

Primary dental care is provided in a number of clinical settings, including the clinics on the MCV Campus and the dental service in the McGuire Veterans Affairs Medical Center. Dental care for the hospitalized patient is provided in both ambulatory and nonambulatory settings.

Rotations in the general practice residency program include anesthesia, medicine, oral pathology, oral surgery, medical oncology, radiation therapy, clinical laboratory, and emergency medicine. Supplementing these rotations is core coursework in physical diagnosis as well as lectures, rounds, and seminar series. Dental residents have the opportunity to participate in conferences and rounds presented by other clinical departments. Dental conferences include treatment planning, literature review, oral pathology slide seminar, oral surgery treatment conference, departmental rounds, and lectures in all the dental specialties.

The faculty include general practitioners, consulting physicians, and specialists from each of

the dental specialties. Dental residents are supervised during all phases of treatment in all settings. Competence in the evaluation and management of patients with medical disorders is a major objective of the training program.

### **Postgraduate Training in Anesthesia for Dentistry**

**ROBERT L. CAMPBELL, D.D.S.**

Program Director

A two-year program in anesthesiology and related sciences prepares the graduate dentist with the necessary didactic and clinical skills for a career in teaching or private practice.

The didactic component combines course work from two academic areas: physical diagnosis directed by the Department of Internal Medicine, School of Medicine, and didactic courses, and educational seminars in the Department of Anesthesiology, School of Medicine.

One-month clinical rotations in medicine and cardiology, and an eight-month rotation in anesthesiology are supplemented with weekly assignments in the outpatient anesthesia clinic in the dental school, the temporomandibular joint and chronic facial pain clinic, pediatric dentistry sedation clinic, and the ambulatory anesthesia clinics in the oral surgery department at the A.D. Williams Clinic and in the Nelson Clinic.

For information contact the Program Director, Department of Oral and Maxillofacial Surgery.

### **COMBINED D.D.S. AND M.S. OR PH.D. PROGRAMS**

The dental curriculum provides an opportunity for interested dental students to enter a combined D.D.S./M.S. or Ph.D. program.

Individualized curricula are developed for such students with the approval of the students' advisors in the basic science department of study and the assistant dean for research of the School of Dentistry. Ordinarily, the combined program requires more than four years to complete requirements for both degrees. For further details, see Part II of this bulletin, the section on basic health sciences programs offered by the School of Medicine.

### **DIVISION OF DENTAL HYGIENE**

**JANET L. SCHARER, R.D.H., M.A.**

Program Director

The Division of Dental Hygiene, instituted in 1969, offers courses in the School of Dentistry leading to a Bachelor of Science degree in dental



hygiene. The program requires two years of liberal arts study, with a minimum of 60 semester hours, followed by two years of study in dental hygiene. The dental hygiene program is accredited by the Commission on Dental Accreditation of the American Dental Association. Upon successful completion of the program, graduates will be eligible for national, regional, and state board licensure examinations.

### Philosophy and General Educational Goals

The Division of Dental Hygiene believes that the modern practicing hygienist needs a broad range of skills to function effectively. Competency in specific clinical-technical skills, while essential, will not be sufficient to meet increasing social needs and demands for comprehensive oral health care at all societal levels. The Division views the dental hygienist with a baccalaureate degree as a leader, not only in helping the dental profession respond to a changing environment, but also in developing and initiating interventions which prevent and control oral disease and promote oral wellness, and in facilitating change itself. Therefore, the baccalaureate degree program in dental hygiene has the following overall goals:

- Perform traditional dental hygiene functions.

- Employ decision-making skills in providing clinical service in health care and educational programs.

- Function with supervision in an extended role in the provision of independent units of service.

- Assume a leadership role within political, social, educational, and professional settings to improve the health of all members of society.

- Design and implement health programs utilizing principles and theories of learning, health care organizations, behavioral science, and communication skills.

- Apply research methodology to design and to evaluate the effectiveness of health care and educational programs.

- Administer dental service programs in comprehensive health care units and community settings.

- Function as a dental health consultant.

- Prepare for graduate and advanced professional programs,

### Honors and Awards

**Sigma Phi Alpha** is the National Dental Hygiene Honor Society. Elected to membership are senior dental hygiene students who rank highest in scholarship and character and exhibit potential qualities for future growth and attainment as recommended by faculty members. Membership

is limited to ten percent of the graduating class and is selected from the upper 20 percent of the class. If 10 percent of the class is fewer than two, a maximum of two seniors may be elected.

**Community Dental Hygiene Award.** This award, presented annually to a graduating senior dental hygiene student, is based not only on the student's ability to recognize and understand the oral health needs of a community, but also on the demonstrated ability to develop and implement a program to meet those needs.

A certificate is given, and the recipient's name is engraved on a plaque which hangs in the School of Dentistry.

**Virginia Dental Hygienists' Association Award.** An annual award is made to one graduating senior and is based on the student's scholastic ability, clinical proficiency, and professional contributions. A one-year membership in the American Dental Hygienists' Association and a certificate are presented to the selected student, and the individual's name is engraved on the school plaque.

**A. D. Williams Award.** An annual stipend may be made, on the nomination of the faculty, to a student in each class who demonstrates unusual promise and ability by virtue of high scholastic attainment and professional performance. Character, motivation, intellectual curiosity, and realization of the opportunities for intellectual development will be considered in the award, which is made at the end of the academic year.

### Financial Aid

Scholarships are available through the American Dental Hygienists' Association. Additional aid is available through loan funds of the Virginia Dental Hygienists' Association, the Virginia Dental Association, and the Financial Aid Office of the School of Dentistry. Full information on financial aid is available upon request from the Financial Aid Office, School of Dentistry, Virginia Commonwealth University, P.O. Box 980566, Richmond, VA 23298-0566.

### Admission Requirements

Two years of liberal arts study with a minimum of 60 semester hours of transferable quality academic courses are required.

#### A. Courses

##### 1. Specific

- a. English—2 semesters
- b. Biology—1 semester
- c. Chemistry—1 semester
- d. Anatomy and Physiology—2 semesters

- e. Microbiology—1 semester
- f. Introductory Sociology
- g. Introductory Psychology
- h. Introductory Speech
- i. Basic Statistics
- 2. Approved electives fulfilling the distribution requirements of the liberal arts college or university currently attending.
- B. At least a "C" average must be earned for all work undertaken.
- C. A personal interview by a previously arranged appointment may be requested during the admissions process.

For further details, contact Admissions, Division of Dental Hygiene, School of Dentistry, Virginia Commonwealth University, P.O. Box 980566, Richmond, VA 23298-0566, (804) 828-9096.

For application information, contact University Enrollment Services/Admissions, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632, (804) 828-0488.

### Graduation Requirements

Graduation requirements are given in the "Academic Performance Guidelines" for the School of Dentistry.

### Curriculum

The curriculum includes study of the basic, dental, and clinical sciences through lecture, laboratory, clinical, and community experiences.

<b>Junior Year, First Semester</b>	<i>Credits</i>
ANA 301 Head and Neck Anatomy .....	5.0
ANA 02 Microscopic Anatomy .....	3.0
MIC 365 Infection and Immunity .....	3.0
ORP 301 Dental Radiology .....	0.5
GEP 311 Dental Anatomy .....	3.0
DEH 301 Dental Hygiene Theory I .....	5.0
DEN 311 Dentistry and Education .....	0.5
	<b>20.0</b>

<b>Junior Year, Second Semester</b>	
DEH 342 Nutrition .....	3.0
ORP 524 Oral Pathology .....	3.0
GEP 302 Dental Materials .....	2.0
DEH 302 Dental Hygiene Theory II .....	2.0
DEH 312 Preventive Oral Health Education .....	3.0
DEH 322 Dental Radiology (Seminar and Rotation) .....	1.5
DEH 327 Clinical Dental Hygiene I .....	3.0
	<b>17.5</b>

<b>Senior Year, First Semester</b>	
PMC 441 Pharmacology .....	5.0
PER 411 Periodontics .....	3.0
DEH 401 Dental Hygiene Theory III .....	2.0
DEH 411 Community Dental Health I .....	3.0

DEH 437 Clinical Dental Hygiene II .....	4.0
DEH 430 Biostatistics and Research Design .....	2.0
DEH 413 Special Patient Care .....	3.0
	<b>22.0</b>

### Senior Year, Second Semester

DEH 402 Dental Hygiene Theory IV .....	1.0
DEH 412 Community Dental Health II .....	3.0
DEH 422 Current Issues, Law, Ethics .....	2.0
DEH 442 Introduction to Dental Health Education .....	2.0
DEH 447 Clinical Dental Hygiene III .....	5.0
	<b>13.0</b>

### DEPARTMENTS AND PROGRAMS OF INSTRUCTION

Some courses in the School of Dentistry are taught in blocks of time which do not lend themselves to identification by lecture or laboratory hours per week. In lieu of this, the hours in those courses are identified by total hours taught.

#### Conjoint Courses:

DEN 510 Scientific Inquiry
DEN 511 Dentistry and Education
DEN 601 Patient Management
DEN 621 Occlusion
DEN 735 Records Management
DEN 741 Head and Neck Pain
DEN 745 Records Management

#### PROGRAM IN DENTAL HYGIENE (DEH)

Assistant Professors—	
Caponigro	Neel
Scharer	

#### Courses in Dental Hygiene (DEH)

DEH 301 Dental Hygiene Theory I
DEH 302 Dental Hygiene Theory II
DEH 312 Preventive Oral Health Education
DEH 322 Dental Radiology
DEH 327 Clinical Dental Hygiene I
DEH 342 Nutrition
DEH 410 Dental Hygiene Theory III
DEH 411 Community Dental Health I
DEH 412 Community Dental Health II
DEH 413 Special Patient Care
DEH 422 Current Issues, Law, Ethics
DEH 430 Biostatistics and Research Design
DEH 437 Clinical Dental Hygiene II
DEH 442 Introduction to Dental Hygiene Education
DEH 447 Clinical Dental Hygiene III
DEH 449 Clinics in Dental Hygiene

#### DEPARTMENT OF GENERAL PRACTICE

Professors—	
Bush	Hunt
Clinical Professors—	
Eshleman	Perkinson
Shepard	
Associate Professors—	
Barnes, RF	Button
Fishman	Harrington
Moon	Sarrett (Chair)
Wittrock	

## Associate Clinical Professors—

Adams	Barnes, RD
Covington	Forgeng
Huband, A.	Hubbard
Jenkins	Kessler
Masters	Rogers
Root	Schroeder

## Assistant Professors—

Baughan	Brokaw
Dishman	Foster
Massler	Robertello
Robinson	Whitehill

## Assistant Clinical Professors—

Certosimo	Elstner
Griggs	Johnson
Kennett	Killar
Kittrell	Roelofs
Stoner	Wade

## Clinical Instructors—

Bredologos	Browder
Cranham	Cummins
Finley-Parker	Gallaher
Hooper	Huband, M.
Johnston	Jones
Kitts	Kontopanos
Korpics	Levin
Mera	Muncy
Norman	Overstreet, D.
Overstreet, S.	Perkins
Stenger	Taylor
Trent	Vacca
White	Wiley

## Courses in General Practice (GEP)

GEP 501 Introduction to Preventive Dentistry  
 GEP 510 Dental Materials (Dental & Dental Hygiene)  
 GEP 511 Dental Anatomy (Dental & Dental Hygiene)  
 GEP 512 Operative Dentistry  
 GEP 514 Fundamentals of Occlusion  
 GEP 620 Cariology  
 GEP 621 Operative Dentistry  
 GEP 739-49 Clinical Operative Dentistry  
 GEP 741 Practice Administration I  
 GEP 743 Clinical Module  
 GEP 745 Clinical Principles of Restorative Dentistry  
 GEP 747 Dental Assistant Utilization Rotation

## DEPARTMENT OF ENDODONTICS

## Clinical Professor—

Lance

## Associate Professors—

Dodds Hartwell (Chair)

## Associate Clinical Professor—

Wade

## Assistant Professors—

Byrne Hahn

## Assistant Clinical Professors—

Archer	East
Wood	

## Clinical Instructors—

Beeson	Begotka
Golian	Hauser
Monfared	Pagan

## Courses in Endodontics (END)

END 622 Principles of Endodontics  
 END 731 Endodontic Therapy  
 END 739-49 Clinical Endodontics

## DEPARTMENT OF ORAL PATHOLOGY

## Professors—

Abbey	Burns (Chair)
Kaugars	Svirsky

## Associate Professor—

Page

## Associate Clinical Professor—

Carr

## Assistant Clinical Professors—

Jones	Pines-Krystal
Sawicki	

## Courses in Oral Pathology (ORP)

ORP 524 Oral Pathology (Dental Hygiene)  
 ORP 621 Dental Radiology  
 ORP 622 Oral Pathology  
 ORP 732 Clinical Oral Pathology & Oral Medicine  
 ORP 737 Radiology Rotation  
 ORP 741 Oncology  
 ORP 747 Emergency Service

## DEPARTMENT OF ORAL AND MAXILLOFACIAL SURGERY

## Professors—

Laskin (Chair) Campbell

## Clinical Professor—

Peters

## Associate Professors—

Giglio Strauss

## Associate Clinical Professors—

Alexander	Bissell
Cuttino	Dent
Green	Hennig
High	Hoard
Hunter	Pirok
Priest	Tankersley

## Assistant Professors—

Abubaker Moray

## Assistant Clinical Professors—

Clough	Dolan
Eschenroeder	Hartman
Isbell	Kenney
Lee	Malbon
Miller	Nelson
O'Neil	Straus
Zoghby	

## Courses in Oral Surgery (ORS)

ORS 622 Introduction to Oral Surgery  
 ORS 731 Physical Evaluation and Principles of Medicine  
 ORS 733 Oral Surgery II  
 ORS 735 Medical Emergencies  
 ORS 739-49 Clinical Oral Surgery  
 ORS 741 Special Patient Care

## DEPARTMENT OF ORTHODONTICS

## Professor—

Isaacson (Chair)

## Associate Clinical Professors—

Anderson	DuVall
Gills	Kaplan

## Assistant Professors—

Davidovitch	Lindauer
Rebellato	Revere

## Assistant Clinical Professors—

Nyczepir	Ross
Wendell	

**Courses in Orthodontics (ORT)**

ORT 623 Orthodontics  
 ORT 733 Orthodontic Therapy  
 ORT 739-49 Clinical Orthodontics

**DEPARTMENT OF PEDIATRIC DENTISTRY**

## Associate Professors—

Farrington (Chair)	Brownstein
Mourino	Wood

## Associate Clinical Professors—

Avent	Bennett
Keeton	Sorensen
Vitsky	Waitkus

## Assistant Professor—

Shetty

## Assistant Clinical Professors—

Adams	Atkins
Barrett	Cox
Jones	Nacht
Paulette	

## Clinical Instructors—

Baker	Biery
Gokli	Loving
Maurer	Pope

**Courses in Pediatric Dentistry (PED)**

PED 622 Pediatric Dentistry  
 PED 733 Pediatric Dentistry  
 PED 739-49 Clinical Pediatric Dentistry

**DEPARTMENT OF PERIODONTICS**

## Professors—

Butler	Schenkein
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## Clinical Professor—

Maynard

## Associate Professors—

Burmeister (Chair)	Abbott
Gunsolley	Koertge
Sarbin	Waldrop

## Associate Clinical Professors—

Davenport	Dorfman
Doswell	Green
Kaugars, C	Griffin
Miller	Moskowitz
Sweeney	Ziegler

## Assistant Professor—

Califano

## Assistant Clinical Professors—

Block	Colasanto
Gooss	Hegarty
Rubis	

## Clinical Instructors—

Dweck	Moretti
Morgan	Ramos

**Courses in Periodontics (PER)**

PER 621 Periodontal Anatomy and Pathology  
 PER 622 Diagnostic Periodontics  
 PER 633 Periodontal Therapy I  
 PER 733 Periodontal Therapy  
 PER 739-49 Clinical Periodontics

**DEPARTMENT OF PROSTHODONTICS**

## Clinical Professor—

Garver

## Associate Professors—

Beck	Burns
Coffey	Douglas
Janus	Kazanoglu
McCasland	Tsao
Unger (Chair)	Ward

## Associate Clinical Professors—

Fenster	Jenkins
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## Assistant Professors—

Crabtree	Lynde
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## Assistant Clinical Professors—

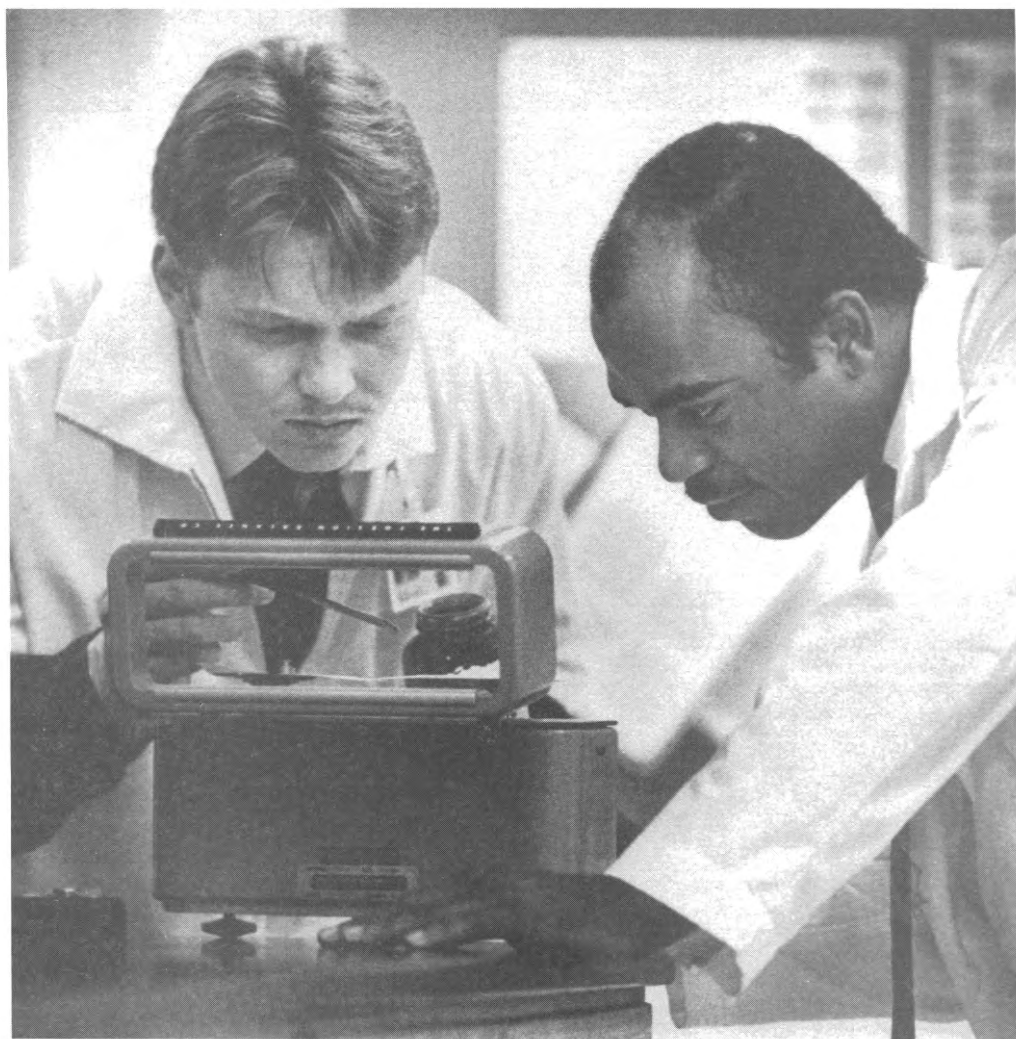
Hoffmann	Kolb
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## Clinical Instructors—

Betzhold	Bredalagos
Bui	Huband
Johnson-Curl	Kim
Miller	Mosey
Muncy	Piascik
Schulman	Stewart
Taylor	

**Courses in Prosthodontics (PRS)**

PRS 622 Preclinical Fixed Prosthodontics  
 PRS 623 Preclinical Complete Denture Prosthodontics  
 PRS 624 Preclinical Removable Prosthodontics  
 PRS 731 Complete Denture Prosthodontics  
 PRS 735 Removable Partial Dentures—Lecture  
 PRS 737 Prosthodontics Diagnosis and Treatment Planning  
 PRS 739-49 Clinical Removable Prosthodontics  
 PRS 742 Implantology  
 PRS 754 Principles of Prosthodontics



# W

## PART IV

### SCHOOL ▼ OF ▼ PHARMACY

JOHN S. RUGGIERO, Ph.D.

Dean

C. EUGENE WHITE, J.D.

Associate Dean for Students

GRAHAM C. WINDRIDGE, Ph.D.

Associate Dean for Administration

THOMAS P. REINDERS, Pharm.D.

Assistant Dean for Clinical Affiliations

SHARON S. SMALL, Pharm.D.

Director of Continuing Education

**T**he School of Pharmacy of the Medical College of Virginia, Virginia Commonwealth University, was officially established in 1898; the University College of Medicine had a school of pharmacy when it opened in 1893. A two-year curriculum gave way to a three-year program in 1925, and in 1932 the school required four years of college work for which a B.S. degree was awarded. The curriculum for the Bachelor of Science in pharmacy degree was extended to five years in 1960. The School of Pharmacy enrolls students in a three-year professional curriculum following completion of two years of pre-professional studies taken elsewhere.

In 1975, the School of Pharmacy received authorization to offer advanced professional education leading to the Doctor of Pharmacy degree.

The three-year professional curriculum is being phased out. In 1995 all students will be enrolled in a four-year professional curriculum leading to the Doctor of Pharmacy degree.

The authority to award graduate degrees in the pharmaceutical sciences was granted by the

Graduate Council in 1952. Departments in the school direct work leading to the M.S. and Ph.D. degrees in medicinal chemistry, pharmaceuticals, and pharmacy administration.

Since 1971, all pharmacy students have participated in a clerkship program. During their last semester, students in the baccalaureate program serve a four-week clerkship within the Medical College of Virginia Hospitals, working directly with patients and their drug therapy programs; four weeks each in a community pharmacy and a hospital pharmacy under the training and guidance of selected preceptors; and four weeks in elective programs. Students in the Doctor of Pharmacy program participate in more extensive clerkships.

#### PHILOSOPHY

In developing the curriculum of the School of Pharmacy, the faculty recognizes that an educated person should be prepared to assume a responsible and rewarding role in society. Accordingly, the educational program is designed to provide a sound, scientific, and professional background for both those who will enter the practice of pharmacy directly and those who wish to continue graduate education in the pharmaceutical sciences. It includes as much of the arts and humanities as possible in order to provide the student with a broad educational base *which will* permit participation in community life, not only as a professional, but also as an informed, concerned citizen. Such courses enrich the student's life by stimulating a greater appreciation of cul-

tural values and sensitivity to the problems of our society.

### MISSION AND GOALS

The School of Pharmacy offers the only pharmacy programs in Virginia and has done so since 1898. As such it is responsible for educating individuals who will develop and provide quality pharmaceutical services and programs through out the Commonwealth as well as individuals who will become involved in the pharmacy and pharmaceutical sciences arenas at the national level.

The mission of the School is to provide organized pharmacy curricula involving sound scientific and professional education for those individuals who will enter the practice of pharmacy directly and special courses and programs for those who seek additional education in pharmacy; and to provide graduate education in the pharmaceutical sciences. The curricula provide a broad educational base, including courses in the arts and humanities, to prepare the graduate to participate in community life as a professional and as an informed and concerned citizen.

The faculty and administration of the School of Pharmacy strive to provide an educational environment which encourages excellence in scholarship; assures excellence in teaching; promotes research for the acquisition of new knowledge in the pharmaceutical and related sciences and in the practice of pharmacy; promotes commitment to service to the University, the profession and community; presents through professional example traditional and innovative roles for pharmacists in health care services; emphasizes an awareness of professional demeanor and ethics; and fosters the concept and importance of life-long learning.

The goals of the School of Pharmacy are to:

- I. Provide organized pharmacy curricula for individuals who will enter the practice.
- II. Provide special courses and programs for those who seek additional education in pharmacy.
- III. Provide quality graduate education in the pharmaceutical sciences.
- IV. Cultivate an awareness of professional demeanor and ethics in students and faculty.
- V. Encourage excellence in scholarship.
- VI. Develop and assure excellence in teaching.
- VII. Promote research and scholarly activity in the pharmaceutical sciences and related disciplines.
- VIII. Encourage the performance of service responsibilities to the university, school, department, profession and broader community.
- IX. Foster the concept and importance of life-long learning.
- X. Assume a proactive role in the development of pharmacy practice.
- XI. Promote faculty development.
- XII. Recruit highly qualified students from all segments of society.
- XIII. Foster relations with alumni, the public, and health professionals.
- XIV. Manage the school's resources and programs in an effective manner.

### CAREER OPPORTUNITIES

Graduation from the School of Pharmacy affords the opportunity to pursue one of several career paths. The most familiar career is that of community pharmacist. In this setting the pharmacist may be self-employed or may be an employee of an organization which may range in size from a single pharmacy to a national chain.

In some cases, pharmacies specialize only in prescription and other health-related needs. About eight out of every ten pharmacists practicing in America serve in some capacity in community pharmacy.

One of the most rapidly growing aspects of pharmaceutical practice is institutional or hospital pharmacy. All major hospitals have one or more full-time pharmacists.

The pharmaceutical industry employs pharmacists in several areas including manufacturing, quality control, research, and sales. Pharmacists are also engaged as medical service representatives who call on physicians. Opportunities are also available in various government services, including the Public Health Service and the Veterans Affairs Administration, as well as in government-operated laboratories.

In most cases, those who aspire to engage in independent research or to teach seek graduate degrees in the pharmaceutical sciences or in specialty fields related to pharmacy.

### FACILITIES

The School of Pharmacy is located in the Robert Blackwell Smith, Jr., Building located at Twelfth and East Clay Streets. This building, which is named in honor of a distinguished former dean of pharmacy, president of the Medical College of Virginia, and provost of the MCV Campus of Virginia Commonwealth University,

was completed in 1984 with the help of contributions from many alumni and friends of the School of Pharmacy.

Classes for students in pharmacy are also conducted in Sanger Hall, located between Eleventh and Twelfth Streets on East Marshall Street. This building houses several departments of the School of Medicine which provide basic sciences instruction for pharmacy students. Students receive clinical experience in the MCV Hospitals and clinics. Other facilities available for teaching include area hospitals and pharmacies. The major library holdings are in the Tompkins-McCaw Library at Twelfth and East Clay Streets.

### ACCREDITATION

The Bachelor of Science and Doctor of Pharmacy programs are accredited by the American Council on Pharmaceutical Education. The school is a member of the American Association of Colleges of Pharmacy.

### PROGRAMS

**Professional.** The Bachelor of Science in Pharmacy degree (B.S.) is conferred upon candidates who have satisfactorily completed the three professional years of the program, have complied with all University regulations concerning degrees, and have been approved by the faculty of the School of Pharmacy. The three-year professional curriculum is being phased out. In 1995 all students will be enrolled in a four-year curriculum leading to the Doctor of Pharmacy degree. The last class to be awarded the Bachelor of Science in Pharmacy degree will be admitted in 1994.

The Doctor of Pharmacy degree (Pharm.D.) is conferred upon candidates who have satisfactorily completed the academic requirements of the program, have complied with all University regulations concerning degrees, and have been approved by the faculty of the School of Pharmacy.

**Graduate.** Departments in the school offer programs of graduate study leading to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.). Students may specialize in biopharmaceutics, medicinal chemistry, biopharmaceutical analysis, or pharmacy administration.

Interested students with graduate study potential should consult the appropriate department chair. Information on procedures and policies for graduate studies can be found in the *VCU Graduate Bulletin*.

### LICENSING AND RECIPROCITY

The Virginia Board of Pharmacy holds qualifying examinations for licensure twice yearly. Applicants for the examination must present evidence that their first professional degree was granted by a school of pharmacy recognized by the board. This school is among those recognized. Applicants must also present evidence of completion of 1,000 hours of practical experience. Completion of the school's B.S. or Pharm.D. programs satisfies 640 hours of that 1000-hour requirement.

Those students who intend to be licensed in Virginia should contact the Virginia Board of Pharmacy, 6606 West Broad Street, Suite 400, Richmond, VA 23230-1717.

Virginia has reciprocal licensing agreements with all states except California and Florida.

### ADMISSION REQUIREMENTS—B.S. PROGRAM

No student will be admitted to the B.S. program after 1994.

Applicants for admission to the School of Pharmacy must attend an accredited college for at least two academic years (six quarters or four semesters) prior to admission.

Students planning to seek a degree in pharmacy upon high school graduation should plan their high school program to meet the requirements for admission in the college where they will take the prerequisite work for admission to pharmacy. High school programs rich in mathematics and the sciences provide excellent preparation for the study of pharmacy.

The minimal admission requirements are listed below. (Meeting these requirements does not, however, guarantee acceptance into the VCU School of Pharmacy.)

- A. A statement affirming the applicant's good moral character signed by one or more pharmacists, physicians, or former teachers may be requested by the Admissions Committee.
- B. An official high school transcript and official transcripts from all colleges attended. Applications are considered by the Admissions Committee only after transcripts on file show completion of no less than two semesters or three quarters of college work. When offered, an acceptance is contingent upon satisfactory completion of specific work that may be in progress.
- C. Academic Prerequisites. Applicants must offer the required credits in the following



subject areas for a total of at least 65 semester hours (97.5 quarter hours).

	Semester Hours	Quarter Hours
Biology (lecture and laboratory) .....	8.0	12.0
General Chemistry (lecture and laboratory) .....	8.0	12.0
Organic Chemistry (lecture and laboratory) .....	8.0	12.0
Physics (lecture and laboratory) .....	8.0	12.0
English .....	6.0	9.0
Mathematics (at least 3 semester hours or 4.5 quarter hours must be calculus) .....	6.0	9.0
Economics .....	3.0	4.5
Electives .....	18.0	27.0
<b>Total .....</b>	<b>65.0</b>	<b>97.5</b>

*Credits earned through Advanced Placement (AP) Tests of the College Board are not acceptable in meeting the total sixty-five (65) semester hours requirement. Such AP credits may excuse a student from taking a specific nonscience course such as English, economics, or mathematics, but these credits must be earned in additional electives.*

*All elective credits must be in liberal arts or behavioral sciences (natural sciences, physical education, business, or studio course credits are not accepted).*

*In unusual cases, students may be admitted subject to completion of course credit prior to graduation.*

D. Applicants must have earned a creditable average ("C" or better) overall, and in the courses specified, to meet minimum academic requirements for admission.

E. Applicants for admission must submit a completed application form; this form requires that the names of four individuals be given, including at least two teachers (preferably in the sciences) qualified to assess the applicant's ability to complete the curriculum in pharmacy.

F. The dean and the committee on admissions may require a personal interview with the applicant.

G. Applicants are urged to take the Pharmacy College Admission Test before admission.

H. Students are admitted only at the start of the academic year. An applicant must complete one full year of the academic prerequisites before an application can be reviewed. The Admissions Committee begins reviewing applicants during October of the year preceding admission. It is to the applicant's advantage to apply during the summer of the year before expected enrollment in the School of Pharmacy. Applicants are accepted pending satisfactory completion of all prerequisite courses.

The following criteria are used to judge applicants:

High school standing

SAT scores

Outside activities in high school

College attended

Academic workload carried

Grade point average—overall, chemistry, biology, and math

Outside activities and achievements

Pharmacy College Admission Test scores

Written and oral communication skills

Extent of exposure to pharmacy practice

Further information and application materials

may be obtained by writing to the Chair, Admissions Committee, School of Pharmacy, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980581, Richmond, VA 23298-0581.

## CURRICULUM — B.S. PROGRAM

### FIRST PROFESSIONAL YEAR (THIRD COLLEGE YEAR)

Semester First Semester	Hours
PHC 302 Medicinal Chemistry I .....	3.0
PHA 301 Principles of Pharmacy I .....	4.5
PHA 311 Pharmacy Law and Ethics .....	1.0
PHA 331 Introduction to Pharmacy Practice .....	2.0
ANA 401 Principles of Human Anatomy .....	4.5
	<b>15.0</b>

Second Semester	Hours
PHA 302 Principles of Pharmacy II .....	4.0
BIC 402 Biochemistry .....	5.0
PIO 482 Physiology .....	4.0
MIC 401 Microbiology .....	4.5
	<b>17.5</b>

### SECOND PROFESSIONAL YEAR (FOURTH COLLEGE YEAR)

First Semester	Hours
PHA 415 Principles of Interpersonal Communication in Pharmacy .....	1.0
PHA 401 Principles of Pharmacy III .....	3.5
PHC 403 Medicinal Chemistry II .....	4.5
PMC 403 Principles of Pharmacology .....	4.5
PHA 411 Clinical Pharmacy & Therapeutics .....	2.5
Elective .....	2-3
	<b>18-19</b>

Second Semester	Hours
PHA 416 Pharmacy Communication Skills .....	1.0
PHA 402 Principles of Pharmacy IV .....	3.5
PHA 403 Principles of Pharmacy Practice Management .....	3.0
PHA 412 Clinical Pharmacy & Therapeutics .....	3.0
PHA 414 Clinical Pharmacy & Therapeutics .....	3.0
PHC 404 Medicinal Chemistry III .....	2.0
PMC 404 Pharmacologic Agents .....	3.0
	<b>18.5</b>

### THIRD PROFESSIONAL YEAR (FIFTH COLLEGE YEAR)

First Semester	Hours
PHA 406 Applied Pharmacy Practice Management .....	2.0
PHA 442 Drug Literature Evaluation .....	2.5

PHA 533 Nonprescription Medication .....	2.5
PHA 510 Advanced Pharmacy Communication Skills .....	1.0
PHA 505 Principles of Law—Pharmacy and Drug Laws .....	3.0
PHC 410 Pharmaceutical Analysis .....	3.0
Elective .....	3.0
	17.0
<b>Second Semester</b>	
PHA 512 Professional Practice Clerkships .....	17.0

In some instances, students in the third professional year may be obliged to travel and reside some distance from Richmond as part of the program. No refund of payments for tuition, fees, or other purposes may be expected by the students in this event if credit is granted for the time spent in this phase of the program. No stipends may be earned by the students in connection with any professional practice program for which the school grants credit. The clerkship program is 17 weeks long and covers the second semester including the week of the spring semester break.

### ADMISSION REQUIREMENTS — DOCTOR OF PHARMACY PROGRAM

The admission requirements described in this section are under review and will change for the class entering the school in 1995. Prospective applicants are urged to contact the school's admissions staff for current information. Please write to the Chair, School of Pharmacy, Admissions Committee, Virginia Commonwealth University, P.O. Box 980581, Richmond, VA 23298-0581.

- A. Applicants must be graduates of, or enrolled in the final year of a B.S. in pharmacy program which is accredited by the American Council on Pharmaceutical Education. Students who have demonstrated superior academic achievement during the first two years of the B.S. in Pharmacy program in this school may be eligible to transfer to the Pharm.D. program at the end of their second professional year.
  - B. Evaluations of the applicant's moral character, personal qualities, and academic and intellectual potential must be provided by professors in a school of pharmacy.
  - C. Verbal, quantitative, and analytical scores from a recent Graduate Record Examination must be submitted. (In exceptional circumstances, requests to waive this requirement will be considered.)
  - D. The Committee on Admissions may require a personal interview with the applicant.
- Further information and application materials may be obtained by writing to the Chair, Pharm.D.

Admissions Committee, School of Pharmacy, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980581, Richmond, VA 23298-0581.

### PHARM. D. CURRICULUM

The Doctor of Pharmacy curriculum has the flexibility to adapt to the needs of students from varied backgrounds with differing objectives. Emphasis may be placed on a clinical or management track. In general, a student who has met the requirements of the baccalaureate program will, during four semesters and a summer, complete a minimum of 75 semester hours, including the following required courses, clinical experiences, and research.

BIS 543 Statistical Methods I .....	3
PHA 650 Drug Literature Evaluation .....	3
PHA 690 Departmental Research Seminar .....	2
PHA 622 Clinical Pharmacokinetics .....	3
PHA 631 Advanced Pharmacy Practice Management I .....	3
PHA 635 Advanced Pharmacotherapeutics and Adverse Drug Reactions I .....	6
PHA 636 Advanced Pharmacotherapeutics and Adverse Drug Reactions II .....	6
PHA 693-696 Advanced Practice .....	33
PHA 697 Directed Research in Pharmacy .....	7

The Doctor of Pharmacy curriculum is currently being revised. Students admitted to the Doctor of Pharmacy program in Fall 1995 will have a completely different four-year curriculum.

### ACADEMIC REGULATIONS

Matriculation in the School of Pharmacy implies a willingness on the part of students to comply with university rules and regulations and to conduct themselves in a manner befitting members of the profession the students seek to enter. The program of study and regulations regarding courses of study, student conduct, etc., are subject to modification without notice. All rules and regulations set forth in this bulletin, as well as other statements issued by administrative officers of the University, apply until further notice.

**Probation.** Students may be placed on probation by either the Committee on Admissions or the Committee on Promotions. Probation is a status indicating that the student's scholarship is deficient and is expected to be improved to a level considered to be satisfactory by the faculty. Students who fail to meet probationary stipulations may expect to have their normal progress through school interrupted. They may be required to attend summer school, to repeat a year, or to withdraw. Students on probation are not eligible

to be nominated for offices in the student government nor to represent the school in athletics or other extracurricular activities. Students on probation are expected to stop, or drastically curtail, any outside employment. Each student who is placed on probation receives a letter in which the details of that individual's probation are described.

**Outside Work.** Employed students ranking in the lower half of their classes may receive a notice from the faculty requesting that outside work be curtailed or eliminated. In general, the faculty believes that students should give first priority to their school work. Students able to maintain academic standing are not restricted with respect to outside employment.

**Honor Code.** All students are governed by the honor code and regulations of the student body organization. A detailed description of the Honor Council's rules of procedure is available upon request.

### FACULTY ADVISING PROGRAM

Each student in the School of Pharmacy is assigned a faculty advisor who can assist the student with academic and personal problems. Students usually remain with the same advisor throughout their attendance in the School of Pharmacy.

There is a faculty advisor to the Interfraternity Council as well as an advisor for each of the professional pharmacy fraternities.

Each of the student chapters of professional pharmacy organizations on campus operates with a faculty advisor.

### ATTENDANCE REGULATIONS

The following regulations apply specifically to students enrolled in the Bachelor of Science in pharmacy and the Doctor of Pharmacy programs in all of their required and elective courses offered by departments in the School of Pharmacy and to required basic science courses offered by the School of Medicine. In courses in which these regulations apply, other students enrolled with pharmacy students also are subject to the regulations.

1. The faculty considers attendance at lectures to be an important component in the successful acquisition of the knowledge and skills required of the professional pharmacist. The faculty strongly encourages students to regularly attend lectures. Individual faculty may require attendance at lectures in their own courses and establish penalties for those who miss lectures and are not excused by the dean's office.

2. Attendance at laboratory classes and pre-laboratory classes is mandatory. Students must complete all required laboratory assignments before a passing grade can be assigned. Students who miss a mandatory class can make up the work for credit if they receive an excuse for the absence from the dean's office. The types of absences which qualify for an excuse are listed under item 4 below. Students whose absences are unexcused must still make up required work, but they may not receive credit toward their course grades for the make-up work.
3. Students must take tests (including quizzes, examinations, and laboratory practicals) at the time designated by the faculty member in charge. Students should be aware that faculty may give unannounced tests. Students who miss any test and who do not receive an excuse from the dean's office will not be permitted to make up the test and will receive a score of zero for that test.
4. Absences may be excused under certain circumstances. Requests for excuses for unavoidable absences must be submitted to the dean's office on the proper form within 24 hours of returning to school after the period of absence. The student must explain on the form the exact reason for the absence. Further explanation, if necessary, may be given in person. It is a violation of the Honor Code to make false or misleading statements on the absence form. Whether the absence is excused or not, the student is responsible for all work missed.

A guiding principle in determining whether or not an absence should be excused is that the absence is caused by circumstances beyond the student's control. The following are considered valid excuses for being absent from a class:

- a. **Illness or a medical or dental emergency.** The school normally accepts the student's judgment that the condition was serious enough to justify the absence from class; however, the school reserves the right to require a medical opinion.
- b. **Death of a relative or friend.** Students will be excused from class to attend funerals. Absence beyond the day of the funeral will be excused for periods of mourning required by a student's religious or cultural tradition, or when a student is too grief-stricken to return immediately to class.

- c. **Mandatory court appearances.**
- d. **Mandatory religious observances.** Students who anticipate absences from class because of religious obligations should submit a list of their anticipated absences at the beginning of each semester in addition to submitting the absence forms following each absence.
- e. **Failure of private, public, or university transportation.**
- f. **Attendance at professional meetings.** Students who are in good academic standing may, with prior approval, receive an excused absence from class to attend a meeting of a professional pharmacy organization. An appended policy statement contains eligibility criteria.
- 5. Tardiness is a form of absence which may also be excused using the criteria mentioned above. Students arriving late for a test may be given the test without an excused absence but will not be allowed extra time beyond the scheduled end of the test. Once any student has completed the test and left the room, late arriving students will not be permitted to take the test unless the absence is excused.
- 6. Absences not reported within 24 hours are considered to be unexcused. It is not the instructor's responsibility to determine whether the absence from laboratories, tests or lectures should be excused; absences may only be excused by a dean.
- 7. Students are expected to make every effort to keep up with their school work during an absence, and thus be prepared to take tests upon their return. If, in the opinion of the school administration, the nature of a student's absence made it impossible for that student to prepare for a test, the student will be permitted to delay taking the test.
- 8. The nature and date of any make-up activity will be determined by the instructor.

Faculty should not give make-up exams before confirming that a student's absence has been excused. If a make-up test is given before an absence has been ruled upon, the instructor must obtain from the student, in writing, an agreement that the grade earned on the exam will be reduced to zero if an excuse for the absence is not subsequently issued.

## PROMOTION

Attending pharmacy school is not a right acquired simply by conforming with the entrance

requirements and paying tuition and fees. Tuition and fees do not defray the total cost of a pharmaceutical education since part of the cost comes from the state and other sources. It is, therefore, a privilege granted to certain qualified persons so that society's need for pharmacists may be fulfilled. The persons to whom this privilege should be granted are, naturally, those who will make the best pharmacists. It is for this reason that the dean and the Committee on Promotions, composed of the students' instructors during the year, require that marginal or failing performance be improved or that the student withdraw from school. The most careful consideration is given during both the admissions process and the promotions process not only to the student's grades but also to his or her probity, industry, scholastic ability, and inclinations.

The following principles outline the prominent features of the promotions process:

1. Students who have passed the work of an academic year in a satisfactory manner usually are advanced to the next higher class provided there are no contravening reasons that make this undesirable.
2. The Committee on Promotions thoroughly reviews the academic record of each student who fails to pass a course or who does not maintain a grade-point average of 2.0 or better. Following this review, the committee may, depending upon individual circumstances, promote a student on a probationary basis, require the student to repeat all or a part of previous work, or terminate the student's enrollment.
3. A student with course deficiencies will not be allowed to enter the final year of the program.
4. Students who fail two or more subjects ordinarily are continued in enrollment only under exceptional circumstances.
5. Students who fail to meet conditions of probation may be asked to withdraw or repeat a year's work.

The above guidelines are not absolute rules, but they indicate what action may be taken in a particular case. The dean and the Committee on Promotions remain entirely free to pass upon each case according to its merits.

Criteria for promotion in the Pharm.D. program are available from the director of the Pharm.D. program.

## WITHDRAWAL

Students finding it necessary to withdraw from the School of Pharmacy must comply with the

provisions for withdrawal in Part I of this bulletin.

The dean of the School of Pharmacy will not approve a request for withdrawal until the student has submitted a letter of resignation.

Students withdrawing without approval and failing to check out laboratory lockers will be assessed a \$5 checkout charge for each locker in addition to any charges resulting from the need to replenish the contents of the lockers.

## READMISSION

Students seeking readmission to the School of Pharmacy will be evaluated on their total academic record. Applicants for readmission to the first professional year will not be given priority over new applicants but must compete with them on an equal basis. Readmission in advanced standing will be considered on a space-available basis.

## GRADUATION

Students are recommended and approved for the Bachelor of Science in pharmacy or Doctor of Pharmacy degrees by the faculty of the School of Pharmacy.

Candidates for the **B.S. in pharmacy degree** must meet the following requirements:

1. Be of good moral character.
2. Complete satisfactorily all the required work in a timely fashion, which will not normally exceed five years from the date of initial enrollment.
3. Pay all fees.
4. Complete the last year's work for the degree in residence in this school.
5. Be present at the commencement exercises unless excused by the dean in writing.

Candidates for the **Pharm.D. degree** must meet the following requirements:

1. Be of good moral character.
2. Successfully complete the prescribed number of credits of advisor-approved courses. The current minimum requirement is 142.5 credits over the four professional years for students who transfer to the program at the end of their second professional year, and 75 post-baccalaureate credits for students who enter the program after receiving the B.S. in pharmacy degree.
3. Maintain an overall grade-point average of at least 2.5 and a grade-point average of 3.0 in the required (core) curriculum.
4. Complete, to the satisfaction of the Research Committee and faculty, all phases of a research project including a written report approved by the student's research committee.

5. Complete satisfactorily the minimum number of required clerkship rotations and demonstrate the attainment of minimum competencies.

6. Fulfill all requirements of the University, including payment of all fees, and be present at official commencement exercises unless specifically excused by the dean in response to a written request.

7. Complete all requirements for graduation within four calendar years from the date of admission to the program, unless admitted to an approved part-time program.

The graduation requirements for the Doctor of Pharmacy degree are being revised.

## HONORS AND AWARDS

**Rho Chi.** This national honorary pharmaceutical society established Lambda Chapter at MCV in 1929. Charters for chapters of this organization are granted only to groups in colleges that are members in good standing of the American Association of Colleges of Pharmacy. Election to membership in the society is based on high attainment in scholarship, character, personality, and leadership. Students become eligible for consideration during the second professional year of the pharmacy program.

Lambda Chapter annually awards certificates in recognition of outstanding scholarship to students who have completed the pre-pharmacy and first professional year pharmacy curriculum. Also, Lambda Chapter selects one member of the senior class who is recognized for excellence in scholarship, leadership, personality, and character. The name is inscribed on a plaque displayed in the School of Pharmacy.

**Virginia Pharmaceutical Association Scholarship Awards.** The Virginia Pharmaceutical Association, wishing to encourage excellence in scholarship among students of pharmacy, established three scholarship awards. The Franklin P. Pitts Award, the William G. Crockett Award, and the Wortley F. Rudd Award are given to the students who earn the highest grade point averages for the year in the first, second, and third professional years respectively. Each award consists of an honorarium and a plaque.

**Virginia Pharmaceutical Association Student Service Award.** An award, consisting of a plaque and an honorarium, is presented to the graduating senior who has been of greatest service to the profession.

**The Merck Award.** An award, consisting of the current editions of the Merck Index and The Merck Manual, is presented to a rising senior.

**The Upjohn Award.** An award, consisting of a plaque and an honorarium, is given to the graduating senior who has been selected for outstanding contributions in public service while enrolled as a student in the School of Pharmacy.

**Clinical Pharmacy Practice Award.** This award, consisting of an honorarium and a plaque provided by Sandoz Pharmaceuticals, is given to the graduating Pharm.D. student who attained the highest grades in clerkships.

**The Edward E. Willey Pharmacy Scholarship Award for Outstanding Scholarship and Leadership.** This award, which memorializes a distinguished alumnus and dedicated public servant, is presented annually to a rising senior student who is determined by a committee of faculty to be outstanding in character, as judged by faculty and classmates; leadership ability, as demonstrated by participation in and leadership of student organizations; and academic performance, as demonstrated by the attainment of a 3.75 grade-point average during the first two years in pharmacy school. The award consists of payment of tuition, fees, and a stipend.

**Linda Nixon Harvey Memorial Scholarship.** This endowed award is presented annually to a rising fifth-year student who has maintained high academic standards in college while exhibiting leadership, professional integrity, and outstanding personal qualities.

**Jacobs Memorial Scholarship Fund.** This endowed award is available annually to pharmacy students in financial need as recommended by the dean of the School of Pharmacy.

**David D. Marshall Memorial Scholarship.** This endowed award is presented annually to a married senior student who ranks academically in the top half of the class and who has a demonstrated financial need.

**M. Bruce Rose Scholarship.** This endowed award is presented annually to a student from the Virginia Pharmaceutical Association's Third District.

**Glenn B. Updike, Sr. Scholarship Fund.** This endowed fund is available, upon recommendation of the dean of the School of Pharmacy, to students who have financial need and scholastic ability. Special preference shall be given to applicants who are residents of Danville, Virginia.

## ORGANIZATIONS

**Student American and Virginia Pharmaceutical Association.** Students in the School of Pharmacy have an opportunity to become members of this national and state-affiliated organiza-

tion. The group meets regularly presenting programs of interest to the student body.

**Student Chapter Virginia Society of Hospital Pharmacists.** Pharmacy students who are interested in the practice of hospital pharmacy may become members.

**Student National Pharmaceutical Association.** This student subdivision of the National Pharmaceutical Association works to define the future role of minority health professionals in the community.

**Professional Fraternities.** Chapters of Phi Delta Chi, Kappa Psi, and Kappa Epsilon are active within the student body. These fraternities extend invitations, according to the rules of the Interfraternity Council, to pharmacy students to become members. Eligibility for consideration is based upon academic achievement as determined by the Interfraternity Council and the dean's office.

## FINANCIAL AID

See Financial Aid section in Part I.

## COURSES OF INSTRUCTION

### Department of Medicinal Chemistry (PHC)

#### Professors—

Abraham (Chair)	Glennon
Kier	May (Pharmacology) <sup>1</sup>
Stubbins	

#### Emeritus Professors—

Andrako	Richard
Smith	Weaver

#### Associate Professors—

Boots	Soine
Westkaemper	Windridge
Wright (Biochemistry/ Molecular Biophysics) <sup>1</sup>	

#### Affiliate Associate Professor—

Van't Riet

#### Assistant Professors—

Kellogg	Scarsdale (Biochemistry/ Molecular Biophysics) <sup>1</sup>
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#### Affiliate Assistant Professor—

Uwaydah

#### Instructor—

Harvie

**302 Medicinal Chemistry I.** Semester course; 3 lecture hours. 3 credits. Prerequisite: one year of organic chemistry. This course integrates the chemical and physical properties of organic molecules with biological effects. Particular emphasis is placed on heterocyclic chemistry, mechanisms of enzymatic reactions, and stereochemistry as they relate to drug action and toxicity. Certain physico-chemical phenomena are described which pertain to biological events.

<sup>1</sup>Department in parenthesis indicates primary appointment.

**403 Medicinal Chemistry II.** Semester course; 4.5 lecture hours. 4.5 credits. Prerequisite: PHC 302. A study of synthetic and natural organic compounds of medicinal and pharmaceutical interest with emphasis being placed on physical and chemical properties and on the relationships between chemical structure and pharmacological activity.

**404 Medicinal Chemistry III.** Semester course; 2 lecture hours. 2 credits. Prerequisite: PHC 403. A continuation of PHC 403.

**410 Principles of Pharmaceutical Analysis.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. A study of the underlying principles and practical limitations of drug analysis procedures with emphasis on those techniques which are most applicable to the quantitation of drugs in biological fluids. The laboratory work involves familiarization experiments and actual assays employing a variety of chromatographic and photometric procedures. In addition, the students will learn to perform colorimetric and chromatographic identification tests for abused drugs.

**526 Research Techniques in Medicinal Chemistry.** Semester course; 0-2 lecture and 2-8 laboratory hours. 1-4 credits. The theory and application of classical, instrumental, and computer techniques used in pharmaceutical research are presented.

**531 Medicinal Chemistry for Nurse Anesthetists I.** Semester course; 4 lecture hours. 4 credits. A review of the principles of organic chemistry and bio-organic chemistry with emphasis on the concepts necessary for an understanding of PHC 532.

**532 Medicinal Chemistry for Nurse Anesthetists II.** Semester course; 3 lecture hours. 3 credits. Prerequisite: PHC 531 or equivalent. A series of lectures covering the structure-activity relationships, metabolism, and mechanism of action of selected agents.

**591 Special Topics in Medicinal Chemistry.** Semester course; 1-3 credits. An elective course in which students may choose to participate in individual or group study in one or more areas of medicinal chemistry. The course can take the form of formal lectures, informal group discussions, literature research, and/or laboratory research. Students must have the permission of the individual instructor before registering for this course. This course is graded Pass or Fail.

**601 Advanced Medicinal Chemistry I.** Fall. 1 lecture hour. 1 credit. Introduces the general concepts important in medicinal chemistry, including drug dynamics, drug macromolecule interactions, drug design, and quantitative structure-activity relationships.

**610 Advanced Medicinal Chemistry II.** Spring. 2 lecture hours. 2 credits. Prerequisites: PHC 601 or the permission of the instructor. Analyze the theories relating to drug action based on receptor theory. Emphasizes drug acting on adrenergic, cholinergic and serotonergic receptors.

**620 Advanced Medicinal Chemistry III.** Spring. 2 lecture hours. 2 credits. Prerequisites: PHC 601 or the permission of the instructor. Reviews the concepts necessary for enzyme inhibitor design. Emphasizes the design of new agents to treat disease states by enzyme inhibition.

**630 Theoretical Methods in Drug Design.** Semester course; lecture and laboratory. 2 credits. Prerequisites: PHC 601, PHC 610 or 620, or permission of instructor. A study of the theoretical methods of drug structure-activity analysis, including molecular orbital theory, topological indexes and physical property correlations. Computational chemistry problems will be emphasized in the laboratory.

**641 Survey of Molecular Modeling Methods.** Semester course; lecture and laboratory. 1 credit hour. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

**642 Nucleoside, Nucleotide, Carbohydrate and Peptide Chemistry.** 1 lecture. 1 credit hour. Surveys nucleoside, nucleotide, carbohydrate, and peptide chemistry with emphasis on their synthesis.

**643 Regioselective Drug Metabolism.** 1 lecture. 1 credit hour. Surveys drug biotransformation reactions. Emphasizes the molecular aspects of Phase I and Phase II drug metabolism.

**644 Asymmetric Synthesis.** 1 lecture. 1 credit hour. Reviews the major asymmetric chemical transformations, including mechanisms, scope, and synthetic utility.

**645 Introduction to Heterocyclic Chemistry.** 1 lecture. 1 credit hour. Introduces the chemistry of heterocyclic compounds. Emphasizes heterocyclic nomenclature and the reactions/reactivity of heterocyclic systems.

**670 Advanced Molecular Modeling.** Theory and Practice. Semester course; 3 credits lecture/laboratory. Prerequisite: PHC 641 or permission of instructor. Examines the principles and application of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug/molecular design. Workshop sessions provide hands-on experience using state-of-the-art hardware and software for molecular modeling.

**690 Departmental Research Seminar.** Semester course; 1 lecture hour. 1 credit. Current problems and developments in pharmaceutical and medicinal chemistry are discussed by visiting lecturers, staff, and students.

**691 Special Topics in Medicinal Chemistry.** Semester course; 1-4 lecture hours. 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as a part of the research training. 697 Directed Research in Medicinal Chemistry. Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree.

## Department of Pharmacy and Pharmaceutics (PHA)

### Professors—

Barr (Chair)	Byron
Carroll	Garnett
Hirsch	McKenney
Polk	Ruggiero
Small, R.	

### Associate Professors—

Ballentine	Comstock
Gonzalez	Karnes

Kirkwood, C. F.	Miederhoff	Cooper	Cosnotti
Poynor	Pugh	Cundiff	Davis
Reinders	Smith, H.	Dulaney	Duong
Venitz	White	Dye	Eichelberger
Associate Clinical Professors—		Fulks	Gallahan
Michael	Smith	Garland	Gerlich
Assistant Professors—		Goldwater	Grasso
Brasfield	Exum	Greiner	Grillo
Hansen	Haveles	Hailey	Halvorsen
Israel, C.	Israel, D.	Hancock	Hawley
Kirkpatrick	Kirkwood, C. K.	Hayter	Hollis
Richardson	Rock	Holder	Holt
Small, S.	Smith, S.	Holzbach	Hughes
Sypniewski	Wall	Humphries	Jennings
Wu-Pong		Johnson, J. S.	Johnson, A.
Assistant Clinical Professors—		Jones, H.	Jones, C.
Adams	Allen	Jones, T.	Jones, W.
Bahlman	Barbaccia	Jussen	Kahn
Berryman	Blanchard	Kale	Kellum
Blue	Bochel	Kenny	Kittinger
Bonthius	Briggs	Kurtyka	Lessing
Brink	Brusig	Linan	Louka
Buck	Budie	Malone	Maness
Carson	Chatelain	McCollum	McCoy
Cole	Davis	McDonald	McGee
Dillon	Dugger	Miller, S.	Miller, W.
Edloe	Emswiller	Mink	Mitchell
England	Gutshall	Mulkey	Muniz
Hasty	Herbert	Newnham	Nguyen
Hughes	Israel	O'Conner	Ogden
Johnston	Kennedy	Orr	Parrish
Konnor	Lawson	Patterson	Petrilla
Limon	Luer	Pickard	Pierce
Lush	Martin	Rayfield	Redford
Mason	McGory	Reinhardt	Rich
Meltzer	Milkovich	Richards	Rodgers, M.
Morgan	Munden	Rodgers, S.	Rodriquez
Necary	Ott	Rosner	Rosser
Pedigo	Pigg	Schalow	Schraa
Poremba	Pugh	Schreier	Scott, G.
Rhodes	Riffiee	Scott, K.	Seyfried
Rogers	Rotz	Shannonhouse	Sharp
Shibley	Sterling	Shelden	Sim
Stillson	Sutton	Sisca	Smith, C.
Tarasidis	Thomas	Smith, E.	Smith, H.
Varalli	Weber	Stoneburner	Stewart
Welk	White	Szalwinski	Taylor
Wilnot-Pater	Wyant	Thompson	Thompson
Yunker		Tiffany	Vincent
Research Assistant Professor—		Walpole	Wampler
March		Wiatt	Wright
Instructors—		Affiliate Dean for Veterans Affairs—	
Baker	Whiteman	Rogers	
Clinical Instructors—			
Abernathy	Allen		
Anderson	Atkins		
Aust	Ballentine		
Barbatti	Barrett		
Blevins	Blouch		
Bowles	Boyer		
Broderick	Brower		
Brown	Buchanan		
Bullock	Burns		
Carlson	Carney		
Carrig	Carson		
Caudill	Clark		
Clasen	Cohee		

**301 Principles of Pharmacy I.** Semester course; 4 lecture and 2 laboratory hours. 4.5 credits. A study of the chemical, physicochemical, and biopharmaceutical principles fundamental to the development and use of medication dosage forms. Pharmaceutical calculations and technology required to compound and dispense dosage forms for prescription orders are presented. Includes discussion of metrology, theory of solutions, kinetics, biopharmaceutics, colloidal systems, and suspensions.

**302 Principles of Pharmacy II.** Semester course; 3 lecture and 2 laboratory hours. 4 credits. A continuation of PHA 301.



**311 Pharmacy Law and Ethics.** Semester course; 1 lecture hour. 1 credit. A review of specific pharmacy laws necessary to function properly as a student extern, and a discussion of ethical issues which impact pharmacy practice.

**331 Introduction to Pharmacy Practice.** Semester course; 2 lecture hours. 2 credits. This course acquaints students with roles and functions of pharmacists within traditional and innovative health-care systems. Students will observe settings in which health care is provided. Requirements for different types of pharmacy practice will be discussed.

**381 Pharmacotherapeutics in Nursing.** Semester course; 3 lecture hours. 3 credits. An introductory course in pharmacotherapeutics for nursing students emphasizing the safe and appropriate use of drugs in the prevention and treatment of disease. Didactic presentations will focus on the principles and concepts of drug action and therapeutic indications for selected drugs and drug classes. The nursing process in relation to pharmacotherapeutics will be included, when appropriate.

**401 Principles of Pharmacy III.** Semester course; 2 lecture and 3 laboratory hours. 3.5 credits. Prerequisite: PHA 302. The course is a continuation of PHA 301 and 302. The physicochemical, pharmaceutical, and biopharmaceutical principles underlying the compounding and use of aerosols, emulsions, topical products, suppositories, powders, granules, capsules, and tablets are presented. Factors affecting the bioavailability of these dosage forms are discussed. In the laboratory the students learn compounding and dispensing skills related to oral, topical, and I.V. dosage forms, the use of the telephone in receiving prescription orders, and the utilization of a patient medication profile system.

**402 Principles of Pharmacy IV.** Semester course; 2.5 lecture and 3 laboratory hours. 3.5 credits. Prerequisite: PHA 401. A continuation of PHA 401.

**403 Principles of Pharmacy Practice Management.** Semester course; 3 lecture hours. 3 credits. This course describes social, behavioral, and economic theories pertinent to the management of pharmacy practices in community, hospital, and other settings.

**406 Applied Pharmacy Practice Management.** Semester course; 2 lecture hours. 2 credits. Prerequisite: PHA 403. Application of theoretical concepts to the practical management of pharmaceutical services will be discussed.

**411 Clinical Pharmacy and Therapeutics.** Semester course; 2.5 credits. An integrated approach to the study of human disease and pharmacotherapeutics. The etiology, pathogenesis, clinical course, clinical manifestations, prevention, and treatment of the more common or significant disease states are presented. Clinical pharmacology, applied clinical pharmacokinetics, and techniques for monitoring and optimizing pharmacotherapy using subjective and objective data are emphasized. Lectures, clinical conferences, and assigned reading from the medical literature are used.

**412 Clinical Pharmacy and Therapeutics.** Semi-semester course; 3 credits. A continuation of PHA 411.

**414 Clinical Pharmacy and Therapeutics.** Semi-semester course; 3 credits. A continuation of PHA 412.

**415 Principles of Interpersonal Communication in Pharmacy.** Semester course; 1 credit. A study of the theory and techniques of communication and counseling related to the delivery of health-care services.

**416 Pharmacy Communication Skills.** Semester course; 1 credit. Supervised practice in developing basic communication skills for pharmacy practice.

**420 Drug Education.** Semester course; 3 lecture hours. 3 credits. A course in drug use education for health educators, emphasizing the safe and effective use of prescription and nonprescription drugs in the overall treatment of illness. Didactic presentations will focus on principles and concepts of drug action and therapeutic indications for selected drugs and drug classes. Drug abuse, drug dependence, rehabilitation methods, and prevention programs will also be discussed. The student will be able to apply educational methodologies to this content area.

**442 Drug Literature Evaluation.** Semester course; 2.5 lecture hours. 2.5 credits. The student is taught to retrieve and to evaluate the validity of published studies and to apply principles of biostatistics in the design and evaluation of clinical drug research studies.

**501 Community Pharmacy Administration.** Semester course; 4 lecture hours. 4 credits. A discussion of the managerial problems involved in the ownership and/or management of a noninstitutional pharmacy. Topics covered include opening or purchasing a pharmacy, personnel management, inventory control, pricing, financial analysis, computer applications, societal expectations, and topics of current interest.

**502 Pharmacotherapeutics for Nurses.** Semester course; 2 lecture hours. 2 credits. Prerequisite: PIO 505. Focus on the application of basic pharmacotherapeutic principles of drug categories to patient management.

**504 Pharmacotherapeutics in Physical Therapy.** Semester course; 1 lecture hour. 1 credit. Introduces pharmacotherapeutics for physical therapy students. Emphasizes the safe and appropriate use of drugs in the prevention and treatment of disease. Focuses on the principles and concepts of drug action and therapeutic indications for drugs and drug classes in didactic presentations. Includes the effects of medications on physical functions when appropriate.

**505 Principles of Law—Pharmacy and Drug Laws.** Semester course; 3 lecture hours. 3 credits. A study of federal and state laws (statutes and regulations) affecting the practice of pharmacy and the distribution of drugs.

**510 Advanced Pharmacy Communication Skills.** Semester course; 1 credit. Prerequisites: PHA 403 and PHA 416. Corequisite: PHA 406. Development of written and oral communication skills through analysis, presentation, and discussion of case studies in pharmacy practice management.

**512 Professional Practice.** 17 credits. The course is divided into four clerkship periods in which students participate in interdisciplinary patient care in the teaching institution and practice situations in community and hospital pharmacies. Emphasis is placed on the team approach to health care and the development of skill in all aspects of contemporary pharmacy practice. Included are student-patient interviews, rational drug therapy, drug information retrieval, modern drug distribution systems, and practice management.

**513 Topics in Pharmacotherapeutics I.** Off-campus semester course; 1-3 credits. A discussion of the pathophysiology, clinical pharmacology, rational drug therapy, drug therapy monitoring, and drug therapy management of patients with gastrointestinal, renal, or cardiovascular diseases.

**514 Topics in Pharmacotherapeutics II.** Off-campus semester course; 1-3 credits. A continuation of PHA 513 covering infectious diseases, diabetes mellitus, chronic obstructive pulmonary disease, oncology, pediatric diseases, geriatric diseases, and pain control.

**515 Topics in Pharmacotherapeutics III.** Off-campus semester course; 1-3 credits. A continuation of PHA 513 and 514 covering nutrition, nutritional aspects of diseases, and psychiatric disorders. Applications of problem solving strategies to the solution of drug therapy problems are discussed.

**533 Nonprescription Medication.** Semester course; 2.5 lecture hours. 2.5 credits. The pathological and clinical manifestations of disease states that lead to self-medication are discussed. Stress is placed on critical evaluation and rational use of nonprescription drug products promoted for patient selection and self-medication.

**541 Pharmaceutical Ethics.** Semester course; 2 lecture hours. 2 credits. A study of the current practice and philosophy of pharmacy. (Graded pass or fail.)

**552 Hospital Pharmacy Administration.** Semester course; 3 lecture hours. 3 credits. An introductory course dealing with hospital pharmacy administration. Subject matter includes the responsibilities, services provided, systems, methodologies, and administrative principles used by pharmacists to coordinate and to direct hospital pharmacy operations.

**591 Special Topics in Pharmacy.** Semester course; 1-4 credits. An elective course in which students may participate in research projects or undertaken special studies, through tutorial arrangements and/or library assignments, in the several areas of the pharmaceutical sciences. (Graded pass or fail.)

**601 Advanced Pharmaceutical Product Development.** Semester course; 3 lecture and 4-10 laboratory hours. 5-8 credits. An advanced study of the pharmaceutical, physico-chemical, and engineering principles and technology underlying the development of various pharmaceutical dosage forms.

**608 Clinical Radiopharmacy.** Semester course; 1 lecture and 2 laboratory hours. 2 credits. Students receive training in the safe use, preparation, calibration, quality control, and clinical diagnostic use of current and investigational radiopharmaceuticals in nuclear medicine practice. Emphasis will be placed on obtaining patient medication histories for the evaluation of agents capable of in vivo and in vitro radioisotopic test modification.

**611 Advanced Physical Pharmacy.** Semester course; 3 lecture and 0-4 laboratory hours. 3-5 credits. Detailed application of physicochemical principles to areas of pharmaceutical interest, including colloids, rheology, phase rule, complexation, kinetics, drug stability, and micrometrics.

**612 Advanced Physical Pharmacy.** Semester course; 3 lecture and 0-4 laboratory hours. 3-5 credits. A continuation of PHA 611.

**621 Advanced Biopharmaceutics and Drug Disposition.** Semester course; 3 lecture hours. 3 credits. Study at the advanced level of the relationships between the physicochemical properties of a drug and dosage form and the absorption, distribution, elimination, and pharmacological effects of the drug. Current theory and methodology involved in solving problems at the research level are emphasized.

**622 Clinical Pharmacokinetics.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. The application of current pharmacokinetic theory to clinical problems involved in optimizing and monitoring drug use in patients. Particular attention is given to adjustment of drug dosage in individual patients with impaired drug elimination due to renal and hepatic dysfunction.

**624 Pharmacokinetics.** Semester course; 3 lecture hours. 3 credits. An advanced treatment of the kinetics of drug absorption, distribution, and elimination utilizing mathematical models, analog, and digital computers for analysis of linear and nonlinear biologic systems.

**625 Pharmaceutical Analysis.** 3 lecture hours. 3 credits. Theory and practice of analytical techniques for the quantitative and qualitative analysis of drugs in body fluids and other matrices. Emphasis is on chromatographic, spectroscopic, and immunoassay methodologies.

**626 Pharmaceutical Analysis Laboratory.** 2 laboratory hours. 2 credits. A continuation of PHA 625 with emphasis on providing "hands on" experience with modern techniques for analysis of drugs and drug metabolites.

**631 Advanced Pharmacy Practice Management I.** Semester course; 3 lecture hours. 3 credits. Classical, social, and systems views of management are introduced with emphasis on the uses of implicit control. The sociology of professions and the nature of the professional work are explored; the management of professional's work is discussed in detail. Design and operation of integrated drug information, drug distribution, and drug use control systems are explored.

**632 Advanced Pharmacy Practice Management II.** Semester course; 3 lecture hours. 3 credits. The planning and development of a total program in institutional drug use control is stressed with emphasis on current human and fiscal resource management theories and applications. Current management problems unique to institutional pharmacy practice are stressed.

**635 Advanced Pharmacotherapeutics and Adverse Drug Reactions I.** Semester course; 3 lecture and 6 laboratory hours. 6 credits. The rational therapeutic choices of drugs with respect to pathophysiological considerations of diseases are emphasized. Clinical application of biopharmaceutics, pharmacokinetics, therapeutics, drug interactions, adverse drug reactions, laboratory findings, and other factors affecting drug efficacy in the context of the total care of the patient is stressed. Detection, clinical evaluation, and management of adverse drug reactions is also emphasized. Students receive advanced instruction in therapeutics and pathophysiology and learn to apply drug knowledge to problem solving using selected patient cases.

**636 Advanced Pharmacotherapeutics and Adverse Drug Reactions II.** Semester course; 3 lecture and 6 laboratory hours. 6 credits. A continuation of PHA 635.

**637 Case Management Conference.** Semester course; 2 lecture hours. 2 credits. Students present and analyze patient cases and selected therapeutic topics from their advanced practice rotations. Emphasis is placed on drug therapy in the context of the total management of the patient with multiple medical problems.

**638 Therapeutic Case Challenge.** Semester course; 2 lecture hours. 2 credits. Students discuss and debate subtleties and controversies in the drug therapy of patients encountered in their practice rotations.

**650 Drug Literature Evaluation.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. A study, at the advanced level, of the techniques used to retrieve and evaluate clinical drug literature. Research methods and research design are taught to better prepare the student to evaluate published research.

**690 Departmental Research Seminar.** Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmacy including students in the Pharm. D. program.

**691 Special Topics in Pharmacy.** Semester course; 1-4 lecture hours. 1-4 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

**692 Clerkship Training.** Semester course; 1-4 credits. This course is designed to train Pharm. D. students to teach pharmacy students in clinical practice sites.

**693-696 Advanced Practice.** Semester course; 3-15 credits. A series of elective and required planned experiences to permit Pharm. D. students to utilize their knowledge of the pharmaceutical sciences in a variety of practice settings. Each course consists of one or more month-long rotations, each carrying three semester hours of credit. Rotations within a course offer different experiences under the same or a different instructor. Enrollment in any of these courses requires the permission of the director of the Pharm. D. program. Rotations are offered in the following areas: inpatient medicine, primary ambulatory care, specialty ambulatory care, drug information, infectious disease, mental health, department program management, management support programs, clinical inpatient program management, clinical outpatient program management, pediatrics, pharmacotherapeutic consultation, pharmacokinetic consultation, nutritional support.

**697 Directed Research in Pharmacy.** Semester course; 1-15 credits. Research leading to the M.S., Pharm. D., or Ph.D. degree.

## BASIC HEALTH SCIENCES

Basic health science courses are included in the pharmacy curriculum. See Part II, the School of Medicine section, for details on the following courses and faculty.

Anatomy 401

Biochemistry and Molecular Biophysics 402

Microbiology and Immunology 401

Pharmacology and Toxicology 403, 404

Physiology 482





# PART V

## SCHOOL ▼ OF ▼ NURSING

NANCY F. LANGSTON, R.N., Ph.D.

Dean

RICHARD R. COWLING, R.N., Ph.D.

Associate Dean, Graduate Programs

JANET B. YOUNGER, R.N., Ph.D.

Associate Dean, Undergraduate Programs

ANTHONY J. DeLELLIS, Ed.D.

Assistant Dean, Administration

**T**he School of Nursing originated in 1893 as part of the University College of Medicine. Since then the educational program has evolved to multiple programs at the baccalaureate, master's, and doctoral degree levels. The undergraduate program contains B.S. degree options for generic students at the sophomore or junior level, an accelerated second degree option for those with a B.S. degree in another field and an option for registered nurses seeking completion of a B.S. degree. An active research program and continuing education opportunities are included. The School of Nursing continues to be a leader in nursing education in Virginia.

### PROGRAMS

Bachelor of Science, Master of Science, and Doctor of Philosophy degree programs are offered through the School of Nursing.

Complete information regarding curriculum and admissions may be obtained by writing to the Office of Student Affairs, School of Nursing, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980567, Richmond, VA 23298-0567.

### FACILITIES AND RESOURCES

The faculty and administrative offices of the school are housed in the Nursing Education Building, 1220 East Broad Street. Additionally, this building has a nursing clinical resource laboratory, computer laboratory, and classrooms equipped with a full range of audio-visual equipment. Both graduate and undergraduate courses are also scheduled in other classrooms on campus.

The clinical laboratories for nursing courses are conducted in the MCV Hospitals and in numerous other hospitals and health agencies in the area. Students are given a diversity of experiences in hospital and community-oriented nursing.

### ACCREDITATION

The baccalaureate degree program in nursing is accredited by the National League for Nursing Council of Baccalaureate and Higher Degree Programs. The program is approved by the Virginia State Board of Nursing, and graduates are eligible to take the registered nurse licensing examination.

The master's degree program is accredited by the National League for Nursing Council of Baccalaureate and Higher Degree Programs. The Primary Care Nurse Specialist programs (ANP, FNP, GNP, OGNP, PNP) are approved by the joint boards of nursing and medicine of Virginia.

### NURSING ALUMNI

All graduates of the Medical College of Virginia School of Nursing, St. Philip School of Nursing, and the Richmond Professional Institute nursing program are eligible for membership in the Nurs-

ing Alumni Division of the Medical College of Virginia Alumni Association of Virginia Commonwealth University. The purposes of the division are to support and promote the School of Nursing. The division also provides support within the University to promote and encourage the development of nursing services of the highest possible quality, to stimulate professional growth, and to promote cooperation and fellowship among nursing alumni and students.

### ANNUAL LECTURESHIPS

Outstanding scholars are brought to the campus through a variety of resources. Students in the School of Nursing have access to special programs of an intellectual and cultural nature on both campuses of the University.

The **Annual Nursing Lectureship**, established in 1966 by contributions from alumni and friends of the School of Nursing, brings to the campus each year a person of national stature in the field of nursing. Alumni and faculty plan and implement the lectureship, which serves as an open forum to many public speakers in the health fields.

The **Yingling Visiting Scholar Program** was established in 1981 by alumni and friends of Dr. Doris B. Yingling upon her retirement in recognition of her many years of service as dean of the School of Nursing. The fund supports visits by eminent scholars to the School of Nursing.

### SCHOOL HONORS AND AWARDS

**Sigma Theta Tau.** The Medical College of Virginia School of Nursing Honor Society inducted its first members in the fall of 1976. This local honor society was accepted as a chapter of the international nursing honor society, Sigma Theta Tau, in the fall of 1977. The chapter, known as Gamma Omega, installed its first members in the fall of 1978. The purposes of Sigma Theta Tau are to recognize superior achievement and leadership qualities, to foster high professional standards, and to strengthen commitment to the ideals and purposes of the profession.

**Becky Godwin Fund.** This fund was established by former Dean Doris B. Yingling in 1978 following completion of the Honorable Mills E. Godwin, Jr.'s, second term as Governor of Virginia. The fund was established in memory of former Governor and Mrs. Godwin's only daughter, Becky. The interest on the endowment contributed to the Medical College of Virginia School of Nursing by Dr. Yingling provides funds to enhance student professionalism in nursing for

individuals enrolled in the under graduate and graduate programs. Awards from the fund are made on an annual basis by the dean.

**Yingling Senior Achievement Award.** Gifts to the institution to honor former Dean Doris B. Yingling have been used to establish an annual award to a senior student in the School of Nursing. Recognition is based on outstanding leadership ability and potential professional growth as determined by a selection of faculty and students.

**Mable Montgomery Award.** This award was established through gifts of faculty and students in honor of Miss Mable E. Montgomery, executive secretary of the Virginia State Board of Nursing, 1949-70. The award alternates annually between a senior student and a faculty member. Leadership, excellence in nursing, and outstanding personal qualities are considered in selecting the recipients.

**Marguerite G. Nicholson Award.** This award was established by alumni and friends of the school to honor a beloved alumna and former faculty member. The award is presented annually to a graduating senior student who best demonstrates the humanitarian qualities of unselfishness, helpfulness to others, consideration, humility, and loyalty to the school.

**Mayme B. Wilson Lacey Award.** Established by alumni of the former St. Philip School of Nursing, this award honors an outstanding alumna of the school who served for many years as assistant director of nursing services for MCV Hospitals. The recipient, a senior nursing student, must be a well-rounded individual committed to nursing as a profession, who gives consistently good nursing care, has the ability to work well with the health team, and shows promise of supporting professional organizations.

**Temple Memorial Award.** The senior and junior classes, 1976-77, and the alumni from the School of Nursing established this award in memory of President and Mrs. T. Edward Temple. The award is given annually to a graduating student in the master's degree program. The recipient must possess characteristics that demonstrate exemplary performance in the advocacy role for the consumer of health care services and for the profession of nursing.

**Martha M. Borlick Research Award.** This award was established in 1980 by an alumna in honor of Dr. Borlick, who served as chairman of the Department of Community Health Nursing from 1970-1978. The annual award honors a graduate student in nursing research as evidenced by the master's thesis.



**Registered Nurse Student Award.** The Registered Nurse Student Award is given in recognition of performance and achievement within the School of Nursing. The award is presented annually to a graduating senior who demonstrates excellence in clinical expertise, leadership, and personal qualities. This award is given with funds provided by faculty in recognition of the increasing number of registered nurses returning for baccalaureate degrees.

**Student Nurses' Association Award.** Initiated by members of the organization, this award is given in recognition of outstanding participation in the Student Nurses' Association at MCV/VCU. The award is presented to a senior SNA member who has demonstrated leadership, dedication, and enthusiasm for the nursing profession through involvement in the organization.

## FINANCIAL ASSISTANCE

Financial assistance is available. Information may be obtained by writing to the Office of University Enrollment Services/Financial Aid, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980244, Richmond, VA 23298-0244.

## Bachelor of Science Program

The School of Nursing has three tracks in the baccalaureate program: (1) the generic, (2) the accelerated second degree, and (3) the RN-BS completion. High school students wishing to attend Virginia Commonwealth University for the entire four years should apply to the pre-nursing program in VCU's College of Humanities and Sciences. Further information on the University's pre-nursing program is provided in the *VCU Undergraduate Bulletin*.

## ADMISSIONS

Applications for admission are welcomed from men and women from any cultural or ethnic background who are interested in a career in professional nursing. Admission into the School of Nursing is competitive. Minimum admission criteria require that an applicant must be eligible for readmission to or in good standing at the last college attended; have a minimum TOEFL score of 550 if they do not use English as their natural language; have a satisfactory grade point average (GPA). GPA is calculated on academic courses only and grades lower than "C" in any required courses are not acceptable. Applicants are required to complete an application and submit the required transcripts, references and standardized

test scores by December 15. Applications may be obtained from the Director of UES/Admission, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632, (804) 786-0488.

Pre-nursing candidates seeking admission to the freshman class at Virginia Commonwealth University may receive preliminary admission to the School of Nursing. Students interested in preliminary admission should present a minimum high school GPA of 3.2, rank in the top quarter of their class, and have combined SAT scores above 1000. At the end of the first semester of the freshman year, the student should submit to the School of Nursing Admissions Committee a transcript showing a GPA of 3.0 or greater on the first semester of full time study at VCU and the appropriate VCU Admissions form. The transcript should be received by February 1. Students must complete all pre-nursing requirements prior to nursing school entry in the fall semester of the sophomore year and must have at least a "C" in all courses. Students who fail to achieve a 3.0 GPA at the end of the first semester of the freshman year will be ineligible to automatically transfer into the VCU/MCV School of Nursing without a second application. However, these students are encouraged to follow the usual admission procedures and submit a standard application with all required forms and records.

Applicants for admission to the Undergraduate Program who wish to be considered for **early acceptance** will be considered if the following criteria are met: (1) submission of the complete application by November 1; (2) GPA of at least 3.4; and SAT (or equivalent) scores of at least 1000.

Applicants who hold a baccalaureate degree in another field are eligible for admission to the **Accelerated Second Degree Program**. In addition to the requirements for generic students listed above, applicants to this track must fulfill the following: (1) submit a graduate application (in lieu of an undergraduate application), and (2) submit GRE scores. Applicants for this track are admitted to the graduate program and pay graduate fees.

Applicants who are RN's and who seek a baccalaureate degree apply to the **RN-BS Completion Program**. In addition to generic admission criteria, applicants must meet the following requirements to be considered: (1) be graduates of state-approved diploma or associate degree programs in nursing; (2) hold a current Virginia License to practice professional nursing.



In addition to taking courses, RN students may establish credit toward the baccalaureate degree in several ways: (1) by portfolio; (2) through transfer of credit from other colleges; and (3) through proficiency examinations using College Level Examination Program (CLEP) for general education and through National League of Nursing standardized examinations for anatomy, physiology, microbiology and nutrition. Information about the CLEP tests may be obtained from the CLEP Administrator, Office of Continuing Studies, Virginia Commonwealth University, P.O. Box 842041, Richmond, VA 23284-2041, (804) 367-6032. CLEP tests are given on a monthly schedule, and arrangements to be tested may be made one month prior to the testing date. Subject examinations are available in multiple areas as listed in information available for the College Entrance Examination Board. Students may earn full course credit by examination for general education courses.

Registered nurses who have achieved baccalaureate degrees in other fields may be admitted directly to the M.S. program in nursing. Individual advising and program planning is required.

Further information will be provided upon request.

**Special students** may enroll in selected courses offered by the School of Nursing with permission of the Associate Dean. Decisions for enrollment in courses is based on permission of the instructor, space availability and designation of the course as "open to special students."

# CURRICULUM

The freshman and sophomore years of the baccalaureate degree program may be taken at the academic campus of VCU or at any other accredited junior or senior college. It is the applicant's responsibility to seek advice from the School of Nursing on courses taken prior to admission. Transfer students are admitted for the summer session prior to the junior year.

A minimum of 60 semester hours of general education courses is required for graduation: Those courses are as follows:

	<i>Semester Hours (SH)</i>
COMMUNICATION .....	6
Writing, 3 SH	
Literature or Composition, 3 SH	
HUMANITIES .....	12
Ethics, logic, critical thinking or philosophy, 3 SH	
Select from literature, foreign language, speech, history, religion, art, music, drama, 9 SH	
SOCIAL SCIENCE .....	12
General psychology, 3 SH	
General sociology, 3 SH	

Elective, 3 SH	
Concepts in Health Through the Life Span,* 3 SH	
SCIENCE .....	22-25
Laboratory science,** 8 SH	
Anatomy and physiology, 5-8 SH	
Microbiology, 3 SH	
Nutrition, 3 SH	
Mathematics (algebra/statistics/college mathematics), 3 SH	
ELECTIVES .....	8
No more than 3 credits in physical education or other activity course	
Total semester hours credit .....	60-63
*School of Nursing Course	
**If chemistry is not taken in high school, one of the laboratory sciences must be chemistry.	

A typical program is as follows:

<b>Freshman Year, Fall Semester</b>	<i>Credits</i>
Composition .....	3
Biology .....	4
Mathematics .....	3
General Psychology .....	3
Sociology .....	3
	16

<b>Freshman Year, Spring Semester</b>	
NUR 100 Risk Appraisal and Health Promotion in Today's World .....	3
Composition .....	3
Humanities—Elective .....	3
Laboratory Science .....	4
Anatomy .....	4
	17

<b>Freshman Year, Summer Semester</b>	
<b>Summer Institute</b>	
<b>Sophomore Year, Fall Semester</b>	
NUR 261 Health Assessment for Nursing Practice ..	3
NUR 200 Concepts of Health Throughout the Life Span .....	3
Physiology .....	4
Ethics/Logic/Critical Thinking .....	3
Nutrition .....	3
	16

<b>Sophomore Year, Spring Semester</b>	
NUR 201 Concepts of Nursing .....	3
NUR 202 Technologies of Nursing Practice .....	3
Microbiology .....	4
Humanities—Elective .....	3
Social Science—Elective .....	3
	16

<b>Sophomore Year, Summer Semester</b>	
<b>TRANSFER STUDENTS</b>	
NUR 201 Concepts of Nursing .....	3
NUR 202 Technologies of Nursing Practice .....	3
NUR 261 Health Assessment for Nursing Practice ..	3
<b>Junior Year, Fall Semester</b>	
NUR 365 Nursing Science I .....	3
NUR 335 Nursing of Women .....	6
NUR 345 Nursing of Children .....	6
Humanities—Elective .....	3
	18

<b>Junior Year, Spring Semester</b>	
NUR 366 Nursing Science II .....	3
NUR 325 Nursing of Adults I .....	6

NUR 355 Psychiatric-Mental Health Nursing .....	6
NUR 370 Theory and Research in Clinical Practice .....	3
	18

**Senior Year, Fall Semester**

NUR 475 Professional Issues in Nursing .....	3
NUR 415 Community Health Nursing .....	6
NUR 425 Nursing of Adults II .....	6
	15

**Senior Year, Spring Semester**

NUR 485 Managerial Theory for Nursing Practice ..	3
NUR 486 Nursing Management Practicum .....	3
NUR 496 Advanced Clinical Practicum .....	3
NUR 405 Nursing Management of the Long-Term Care Client .....	3
Upper division or nursing elective .....	3
	15

Applicants who hold a baccalaureate or higher degree in another field are eligible to enter the accelerated second degree program. This program allows for the completion of approximately 24 hours of study toward a master's degree while meeting the requirements for licensure as a registered nurse. Enrollment in this program requires admission to both undergraduate and graduate programs and the graduate tuition rate applies for the majority of the course work.

**Accelerated Second Degree****Sample Curriculum** *Semester Hours (SH)*

COMMUNICATION .....	6
Writing or Composition, 3 SH	
Speech of Literature, 3 SH	
SOCIAL SCIENCE .....	3
Developmental psychology, including child, adolescent or human growth and development, 3 SH	
SCIENCE .....	8
Human anatomy and physiology, 5 SH	
Statistics, 3 SH	

**Summer Session** *Credits*

NUR 201 Concepts of Nursing .....	3
NUR 202 Technologies of Nursing Practice .....	3
NUR 261 Health Assessment for Nursing Practice ..	3
	9

**Admit to Master's Program****Junior Year, Fall Semester**

NUR 507 Advanced Concepts: BioPhysiology .....	3
NUR 335 Nursing of Women .....	6
NUR 345 Nursing of Children .....	6
NUR 500 Theories and Models of Nursing .....	3
	18

**Junior Year, Spring Semester**

NUR 502 Pharmacology .....	3
NUR 325 Nursing of Adults I .....	6
NUR 355 Psychiatric—Mental Health Nursing .....	6
NUR 508 Advanced Concepts: Management .....	3
	18

**Junior Year, Summer Semester**

NUR 415 Community Health Nursing .....	6
NUR 570 Nursing Research I .....	3

NUR 486 Nursing Management Practicum .....	4
NUR 498 Dual Discipline Study .....	3
	16

**Senior Year, Fall Semester**

NUR 425 Nursing of Adults .....	6
NUR 511 Advanced Health Assessment** .....	3
NUR 6xx Graduate Non-Clinical Course .....	3
NUR 506 Advanced Concepts: SocioPsycho .....	3
	15

**Second Baccalaureate Degree****Licensure**

\*\*Graduate Courses Depending on Master's Track

There are a variety of ways the RN student can sequence the courses in the nursing major. Students may choose weekend, evening and/or day courses. The following is a typical curriculum plan:

**Fall Semester**

NUR 261 Health Assessment .....	3
NUR 302 Dynamics of Professional Nursing Practice .....	3
NUR 370 Theory and Research in Clinical Practice .....	3
Elective .....	3
	12

**Spring Semester**

NUR 405 Nursing Management of Long-Term Care Client .....	3
NUR 475 Professional Issues in Nursing .....	3
NUR 485 Managerial Theory for Nursing Practice ..	3
NUR 486 Nursing Management Practicum .....	3
	12

**Summer Session**

NUR 415 Community Health Nursing .....	6
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**Commuting and Community Practice.** Students are assigned to a variety of hospitals and health agencies in the Richmond area. Occasionally, these assignments may be during evening hours. Public transportation is sometimes available to reach these assignments, but use of an automobile is often necessary, especially in community health nursing. Transportation costs vary widely each semester and may range from very little to more than \$100. Students who anticipate need of financial assistance for transportation costs should apply to the Office of Financial Aid in advance.

**Use of Educational Materials.** During the program students have access on a limited basis to certain equipment, such as tape recorders, computers, and books not owned by the University libraries. It is expected that all such materials will be used with care and returned in good condition within the time limit specified. If not, students will be expected to pay the cost of repair or replacement. If such obligations are not met, course grades will be withheld from the student

and will not be posted on the permanent record. Thus, graduation, recommendation to take the National Council Licensure Examination for Registered Nurses (NCLEX-RN) Examination, or transfer to another college or university would be impaired by failure to meet these obligations.

## ACADEMIC REGULATIONS

### Progression

The minimum passing grade in the general education courses and the nursing major is a "C." Any nursing student who receives less than a "C" in any course must repeat the course with a "C" or better. Progression to the next level clinical courses is based upon satisfactory completion of courses of the current year and a cumulative grade point average of not less than 1.91. Courses at the next level in the nursing major without a clinical component may be taken before students officially progress to that level. Appeal to all progression issues is made to the Undergraduate Admission, Policy and Progression Committee. The clinical laboratory grading system is satisfactory or unsatisfactory. Unsatisfactory clinical application results in a grade of "F" for the course.

Students may be dismissed from a clinical course for any behavior that is judged unsafe or that is actually or potentially injurious to patients, staff or the reputation of a clinical facility. Further, any student who has been convicted of a felony may be ineligible for licensure as a registered nurse in Virginia. Students or applicants should address any questions of this nature directly to the Virginia Board of Nursing.

There are additional requirements for satisfactory progression in the School of Nursing and all students are responsible for compliance with additional School policies, which are listed in the *School of Nursing Handbook*.

### Readmission

The student desiring readmission is given equal consideration with other applicants. The procedures for readmission are as follows:

- The applicant for readmission must submit a letter to the Undergraduate Admissions, Policy and Progression Committee requesting review.
- Prior to acceptance for readmission, the applicant is required to be interviewed by the full Undergraduate Admissions, Policy and Progression Committee or by individual members thereof.
- The applicant's record from the School of Nursing will be used as one of the criteria

for making a decision. The applicant's employment record, educational record, and other experiences subsequent to termination at the School of Nursing will also be considered.

### Completion of Degree Requirements— Time Limit

Once the student enrolls in the School of Nursing, *the degree requirements must be completed within six calendar years*. The credentials and programs of a candidate unable to meet this requirement may be evaluated by the Undergraduate Admission, Policy and Progression Committee upon request. Such a candidate may have to meet additional requirements established during the interval since matriculation. **All students must be enrolled in the School of Nursing for the final semester of study in order to graduate.**

### CPR

Students entering the School of Nursing must be certified in cardiopulmonary resuscitation (CPR) before they begin their first clinical nursing course (N202, Technologies of Nursing Care). Courses of CPR that meet this requirement are course "C" offered by the American Heart Association and Basic Life Support (and its prerequisite course, Community CPR), offered by the American Red Cross. Students are required to show evidence of their current CPR certification to their clinical instructors the first day of each clinical rotation. Those who are not certified will not be allowed to participate in the clinical laboratory and will be considered to have an unexcused absence.

### Separation from the School

A student who wished to withdraw from the School of Nursing should discuss the plans with the Associate Dean for the undergraduate program. Before leaving the school, the proper forms must be obtained from the registrar and completed by the student. Failure to follow this procedure may prevent readmission to the School of Nursing at a later date.

## Graduate Degree Programs

The School of Nursing offers programs of study leading to the Master of Science and Doctor of Philosophy degrees.

The purpose of the master's program is to prepare advanced practitioners in nursing. Gradu-

ate education in the School of Nursing has three major thrusts. Students integrate the process of development, use, and transmission of knowledge and research in an advanced practice area; they learn to apply knowledge in clinical practice; and they develop understanding of how social, political, and economic forces impact on nursing practice and health care delivery. Advanced study in the master's program emphasizes a synthesis of knowledge from nursing and related disciplines together with a systematic investigation of underlying concepts; students have a thorough foundation for further study at the doctoral level.

The Master of Science program includes major study in community health, gerontologic, maternal-child (perinatal and infant-child), medical-surgical, oncology, nursing administration (executive and clinical manager), primary care specialist (adult, family, gerontologic, obstetric-gynecologic, and pediatric), and adult and child psychiatric-mental health nursing.

The purpose of the Doctor of Philosophy program is to prepare scholars and researchers in nursing with the depth of educational preparation to engage in significant independent investigation in areas critical to the advancement of clinical nursing practice and nursing administration. The concentration in nursing administration prepares nurses for research and/or educational positions in a variety of settings, including academic, corporate, public, and private institutions concerned with the delivery of patient care and health services. The clinical science option which is offered cooperatively with the Department of Microbiology and Immunology of the School of Basic Health Sciences prepares nurses to engage in microbiological/immunological research related to the clinical practice of nursing.

Information regarding admission requirements and procedures and a complete description of these graduate programs may be found in the *Virginia Commonwealth University Graduate Bulletin*. Applications may be obtained from the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051.

To provide sufficient time for review of applications in the School of Nursing, it is advisable that completed applications for the master's program be received by June 1 for fall semester, November 1 for spring semester, and April 1 for summer session admission. Graduate Record Examination scores may be forwarded separately.

## FACULTY

### Professors—

Francis  
Langston

### Associate Professors—

Bampton  
Bobbitt  
Clarke  
Crowder  
Goren  
Mark  
Smith  
Tesh  
Younger

### Assistant Professors—

Bell  
Collins, B.  
Cox  
Griffiths  
Lacey  
Pickler  
Stuckey  
Waters

### Instructors—

Boyle  
Donovan  
Garey  
Graves  
Hart  
Lipp  
White

### Clinical Faculty—

Akridge  
Allison  
Astin  
Bruce  
Caulker-Burnett  
Chaisson-Rickett  
Condrey  
Coyne  
Fishel  
Gammon  
Gersch  
Hafford  
Hanna  
Helmick  
Hyler  
Jakubec  
Jones  
Kedy  
Keitz  
Kennedy  
Knutsen  
Lindamood  
Lynch  
Metzger  
Modigh  
Morris  
McMahon, D.  
McNeil  
Pettrey  
Rogers  
Ross, C.  
Savage  
Selig  
Smith, L.  
Snipes

Kissinger  
Munjias

Barrell  
Calderon  
Collins, J.  
Exley  
Henry  
Olgas  
Strauss  
Wyman

Brant  
Corley  
Fleming  
Jones  
Munton  
Sawin  
Turner  
Youngkin

Davis  
Erickson  
Grap  
Greenberg  
Jaeger  
Metzger  
Yow

Allport  
Ames  
Booth  
Campanella  
Centor  
Chisholm  
Connelly  
Cushnie  
Gamel-McCormick  
Geldmaker  
Glass  
Hamric  
Harris  
Hundley  
Jacobs  
Johnson  
Jordan  
Kees  
Kenley  
Keohane  
Kudless  
Lantz  
Martin  
Miller  
Moore  
Murmer  
McMahon, J.  
Parpart  
Renick  
Ross, B.  
Saunders  
Sebastian  
Settle  
Smith-Jones, S.  
South

Thornby  
Vaughan  
Watson  
Wright

Ulmer  
Verran  
Wood

## COURSES OF INSTRUCTION (NUR)

Listed below are the courses in the nursing major. For all courses with a clinical laboratory, the laboratory is designed to develop the clinical and critical thinking skills needed to use the nursing process with specific population groups.

**100 Risk Appraisal and Health Promotion in Today's World.** Spring semester course; 3 lecture hours. 3 credits. Elective not limited to nursing majors. Considers health self-assessment and promotion in today's health care system with emphasis on risk appraisal, the influences of individual and family health beliefs and values, research, and the role of the professional nurse and other members of the health care team.

**200 Concepts of Health Throughout the Life Span.** Fall semester course; 3 lecture hours. 3 credits. Discusses normal growth and development in the context of health maintenance and health promotion responses and their relationships to individual changes during each stage of the life cycle.

**201 Concepts of Nursing.** Spring or summer session; 3 lecture hours. 3 credits. Prerequisite or co-requisite: NUR 261. Provides a foundation for all clinical nursing courses. Content focuses on human responses to health and illness and those concepts basic to a caring relationship including nursing process, communication, patient teaching, professional responsibility, and systems. Introduces roles of technology in modern health care environments, including management of patient information.

**202 Technologies of Nursing Practice.** Spring or summer session; 9 laboratory hours. 3 credits. Prerequisite or co-requisite: NUR 201. Provides opportunities for practice and demonstration of selected skills in the laboratory and on an inpatient unit. Focuses on application of basic concepts of nursing and use of beginning skills in caring relationships. Introduces tools of patient information management and patient monitoring.

**261 Health Assessment for Nursing Practice.** Fall or summer session; 2 independent study hours and 2 laboratory hours. 3 credits. Teaches history taking and physical examination with consideration of individual differences. Primary focus is on well adults and variations of normal.

**302 Dynamics of Professional Nursing Practice.** Fall or summer session; 2 lecture and 3 clinical laboratory hours. 3 credits. RN students only. Provides a link between the RN student's initial education and the baccalaureate program. Expands knowledge of concepts of nursing practice including systems, nursing process, communication, and professional responsibility. Validates knowledge from previous clinical courses through a variety of assignments. Tailors clinical experiences to the needs of individual students.

**305 Knowledge Validation by Portfolio.** Semester course; 3 credits. Elective. RN students only. Involves self-assessment of prior learning for RN. Requires correlation of experiential and theoretical knowledge with objectives of selected nursing courses. Culminates in submission of a portfolio for valida-

tion of course-specific knowledge and evaluation for full or partial credit.

**325 Nursing of Adults I.** Semester course; 3 lecture hours and 9 clinical laboratory hours. 6 credits. Prerequisite or co-requisite: NUR 200. Focuses on the human responses of the ill adult. Includes gerontological nursing concepts. Provides clinical experiences with hospitalized patients and in some specialty areas such as the operating room.

**335 Nursing of Women.** Semester course; 3 lecture hours and 9 clinical laboratory hours. 6 credits. Prerequisite or co-requisite: NUR 200. Examines gynecological health needs of women of all ages with emphasis on health care of the childbearing family. Includes clinical experiences in labor and delivery, newborn nurseries, and other hospital and outpatient settings.

**345 Nursing of Children.** Semester course; 3 lecture hours and 9 clinical laboratory hours. 6 credits. Prerequisite or co-requisite: NUR 200. Analyzes children's responses to illness and health care including hospitalization, principles of growth and development, family systems theory, and concepts from child pathophysiology. Clinical experiences reinforce standards of care for both well and ill children.

**355 Psychiatric-Mental Health Nursing.** Semester course; 3 lecture hours and 9 clinical laboratory hours. 6 credits. Prerequisite or co-requisite: NUR 200. Explores mental health and applies the three levels of prevention to mental illness. Expands communication skills for therapeutic interaction. Discusses influences of family and community and physiological disruptions on development and treatment of mental illness. Clinical experiences focus on mental health needs in community and hospital settings.

**365 Nursing Science I.** Fall semester course; 3 lecture hours. 3 credits. Integrates the foundations of nursing diagnosis and intervention derived from pathophysiology, Biochemistry, pharmacology, and nutrition in the study of the cardiovascular and respiratory systems.

**366 Nursing Science II.** Spring semester course; 3 lecture hours. 3 credits. Integrates the foundations of nursing diagnosis and intervention derived from pathophysiology, biochemistry, pharmacology, and nutrition in the study of the endocrine and immunologic systems.

**370 Theory and Research in Clinical Practice.** Semester course; 3 lecture hours. 3 credits. Examines nursing theory and research in the development of nursing science. Analyzes selected conceptual models in nursing and applies them to clinical practice. Develops beginning understanding of the research process and ability to critique nursing research for application to clinical practice.

**405 Nursing Practice in the Long-Term Care.** Semester course; 2 lecture hours and 3 clinical laboratory hours. 3 credits. Focuses on concepts of chronicity, disability, caregiving, rehabilitation and long-term care. Includes all age groups with an emphasis on the frail elderly. Provides clinical experience in a variety of long-term care settings.

**415 Community Health Nursing.** Semester course; 3 lecture hours and 9 clinical laboratory hours. 6 credits. Incorporates the community/public health concepts of health promotion and disease prevention. Focuses on family and commu-

nity and includes concepts of epidemiology, environmental health, health education, advocacy, case management, and interdisciplinary collaboration. Develops experience in the independent role of community nursing.

**425 Nursing of Adults II.** Semester course; 3 lecture hours and 9 clinical laboratory hours. 6 credits. Focuses on patient and family response to complex illness. Applies an ethical decision-making model to clinical situations. Provides opportunities for clinical experience in a variety of hospital settings such as critical care, burn, and transplant units.

**475 Professional Issues in Nursing.** Semester course; 2 lecture hours and 2 seminar hours. 3 credits. Focuses on issues of professional practice by exploring the history of nursing, health care policy, codes of ethics, and legal and economic implications for nursing. Provides opportunities for students to demonstrate competence in group process.

**485 Managerial Theory for Nursing Practice.** Semester course; 3 lecture hours. 3 credits. Focuses on principles of management as applied to nursing service units, organization of nursing services, health care systems.

**486 Nursing Management Practicum.** 12 clinical laboratory hours. 3 credits. Pre- (by one semester) or co-requisite: 485. Provides opportunities to apply management principles to nursing practice in a variety of settings and specialty areas. **496 Clinical Practicum.** Semester course; 9 clinical laboratory hours. 3 credits. Facilitates transition into the professional role using a faculty-student-practicing nurse mentorship model. Provides opportunities for practice in a student-selected specialty area.

**496 Clinical Practicum.** Semester course; 9 clinical laboratory hours. 3 credits. Facilitates transition into the professional role using a faculty-student-practicing nurse mentorship model. Provides opportunities for practice in a student-selected specialty area.

## GRADUATE COURSES IN NURSING (NUR)

The course descriptions provided here are for the major in nursing and are restricted to students in this major. Please see other sections of the bulletin for courses in other schools and departments. Lecture hours may be used as seminar in which case the hours are doubled.

**500 Theories and Models for Nursing.** 3 lecture hours. 3 credits. Focuses on the analysis and evaluation of conceptual models of nursing and related theories for application in all advanced practice courses.

**502 Advanced Pharmacotherapeutics for Nurse Practitioner Practice.** 3 lecture hours. 3 credits. Prerequisite: Graduate status or permission of the instructor. Focuses on the knowledge, principles, and application of pharmacotherapeutics for the management of common primary care health problems by the nurse practitioner.

**505 Clinical Teaching in Nursing.** 3 lecture hours. 3 credits. Focuses on theories and principles related to teaching and evaluation for patients, nursing staff, and students. Explores multiple teaching strategies and learning styles and

application of teaching and evaluation methods to the clinical situation.

**506 Advanced Nursing Practice: Sociopsychologic Concepts.** 3 lecture hours. 3 credits. Examines selected sociopsychologic theories and concepts and relates them to the practice of professional nursing. Focuses on systems and developmental theories.

**507 Advanced Nursing Practice: Biophysiological Concepts.** 3 lecture hours. 3 credits. Focuses on selected physiological concepts that underlie the identification of specific nursing diagnoses and nursing interventions at an advanced practice level. Includes individual ineffective coping, pain, alterations in energy, tissue perfusion, sensory-perceptual systems, immune response, wound healing, sleep patterns, fluid and electrolyte balance, acid-base balance, and thermoregulation.

**508 Advanced Nursing Practice: Health Care Delivery and Management.** 3 lecture hours. 3 credits. Provides an understanding of the context in which health services are managed and delivered. Explores social, ethical, and political issues affecting current and future nursing care delivery systems. Examines cost-effectiveness of nursing care in a variety of settings.

**510 Nursing Ethics.** 3 lecture hours. 3 credits. Identifies and examines moral dilemmas encountered in professional nursing practice. Examines personal value systems, applies ethical theory and principles to dilemmas in clinical nursing practice: patient's rights, informed consent, confidentiality, quality of life, and death and dying. Examines relationships between professional nursing and resolution of moral dilemmas.

**511 Health Assessment for Advanced Nursing Practice.** 1 lecture credit; 2 lab credits. 3 credits. Focuses on advancing students' knowledge and assessment skills in health history and physical examination techniques. Emphasizes assessment of deviations from normal and selected content in specialty areas. Includes supervised experiences with advanced clinical assessment skills.

**540 Infant Assessment.** 2 lecture and 3 clinical hours. 3 credits. Presents infant (birth to two years) assessment techniques and tools which will prepare health professionals to adapt and utilize results of recent research findings for infants and families. Learn assessment scales that examine the infant's sleep patterns, behaviors, interactions with care-giver, and the environment. Clinical practice focuses on obtaining interobserver reliability in use of scales. Home visits with a partner are required.

**570 Nursing Research I.** 3 lecture hours. 3 credits. Focuses on research methodology, critical analysis of studies, and relationships among theory, research, and practice leading to the development of a research proposal.

**571 Principles of Epidemiology.** 3 lecture hours. 3 credits. Provides theoretical foundation for understanding health problems and needs of American society. Analyzes factors that alter the course of disease and health problems in selected populations. Analyzes concepts, methods, and uses of epidemiology in human populations.

**591 Special Topics.** 1-3 credits. Explores specific topics in nursing theory and practice.

**592 Directed Study in Nursing.** 1-3 credits. Prerequisite: permission of instructor. Independent study in a specific area of nursing developed under the supervision of a member of the graduate faculty.

**603 Advanced Gerontologic Nursing I.** 2 lecture hours. 3 clinical hours. 3 credits. Examines physiological, psychological, and sociocultural processes associated with normal aging. Analyzes relevant theories, concepts, and research findings from the behavioral, social, and biological sciences as a basis for advanced nursing practice with older adults and their families. Emphasizes health promotion with individuals within the context of their functional capabilities, social support networks, and environment. Explores the advocacy role of the gerontological nurse specialist in sociopolitical issues affecting the health of the elderly. Provides clinical practica in community settings.

**604 Advanced Gerontologic Nursing II.** 3 lecture hours. 3 credits. Examines common high-risk physiological and psychosocial alterations associated with aging. Applies relevant theories, concepts, and research findings related to acute and chronic illness as a basis for advanced nursing practice with aging clients and their families. Stresses strategies for health maintenance within the functional capabilities and lifestyles of aging clients and future trends in the long-term system.

**605 Advanced Practice in Gerontologic Nursing.** 9 clinical hours. 3 credits. Prerequisites: NUR 507, 508, 603; corequisite: NUR 604. Stresses development of clinical competence required in delivering nursing care to aging clients and their families. Applies relevant theories, concepts, and research findings in advanced nursing diagnoses and therapeutics. Emphasizes working with individuals, families, groups, and interdisciplinary teams. Explores the role of the gerontological nurse specialist in delivering health care in different settings. Provides clinical practica in a variety of community and institutional settings.

**606 Nursing of Older Adults.** 2 Seminar and 6 clinical hours. 3 credits. Prerequisites: NUR 511, NUR 666. Focuses on advanced nursing practice related to the management of common high risk health alterations of older adults. Applies relevant theories, concepts, a research findings related to acute and chronic illness as a basis for clinical assessment and decision making with aging clients and their families. Explores the role of the gerontological nurse practitioner in delivering health care in different settings. Provides clinical practice in a variety of community and institutional settings.

**612 Advanced Community Health Nursing I.** 3 lecture hours. 3 credits. Prerequisites: NUR 500, 506, Epidemiology, Biostatistics. Provides the theoretical foundation for advanced community health nursing practice. Examines and integrates public health science, nursing theories, and community.

**613 Advanced Community Health Nursing II.** 2 seminar and 6 clinical hours. 3 credits. Prerequisites: NUR 500, 506, 612 (Can be taken concurrently with NUR 612.) Provides the student with opportunity to apply theories and community health models of care to families and community groups in the advanced practice role. Permits students, in partnership with a community, to validate, analyze, and interpret data. Establishes a clinical practice based upon a diagnosed need and provides care to a family and group, using a recognized nursing model.

**614 Advanced Community Health Nursing III.** 9 clinical hours. 3 credits. Prerequisites: NUR 612, 613. Concentrates on a synthesis of the principles and practice of advanced community health nursing, public health, and management as the basis for development of the skills required for nursing leadership in positions in public/community health organizations and ambulatory care settings. Provides through prerequisites and course content the foundation for issue-related seminars and a community health leadership practicum.

**622 Cancer Nursing I.** 3 lecture hours. 3 credits. Prerequisite: NUR 500 or permission of instructor. Provides a theoretical base for oncology nursing practice, emphasizing the integration and synthesis of relevant knowledge utilizing the nursing process. Covers cancer epidemiology, carcinogenesis, cancer pathology, risk factors, prevention, detection, diagnosis, and treatment methods for common adult malignancies.

**624 Advanced Practice in Cancer Nursing.** 2 seminar hours and 6 clinical hours. 3 credits. Prerequisite NUR 622. Integrates theory, research, and practice in the management of clients with multiple and complex problems associated with the diagnosis and treatment of cancer. Provides opportunities for evaluating and developing advanced clinical competence and for acquiring specialized skills needed for advanced nursing practice.

**626 Nursing of Acutely Ill Adults.** 2 seminar, 6 clinical hours. 3 credits. Prerequisite: NUR 507. Focuses on factors affecting the delivery of nursing care to patients in the acute and dynamic stages of complex medical-surgical conditions. Discusses the pertinent nursing diagnoses and interventions for these patients while using the framework of multi-system failure.

**628 Immunocompetence: Clinical Applications in Nursing.** 1 lecture, 2 seminar and 3 clinical hours. 3 credits. Co- or prerequisite: NUR 507, graduate physiology, or permission of the instructor. Focuses on impaired immunocompetence across the life span as a result of secondary causes. Explores concepts and factors related to the phenomenon of immunocompetence using a nursing case management approach. Analyzes clinical problems associated with immunodeficiency. Examines AIDS, infection, malignancy, autoimmune disease. Examines management strategies such as transplantation, augmentation of host defenses, and other treatment modalities as they relate to and influence nursing care.

**629 Nursing of Adults Recovering from Acute Illness.** 1 seminar and 2 clinical hours. 3 credits. Prerequisites NUR 500, NUR 507 or permission of the instructor. Focuses on relevant research findings that are applicable to the post-acute phases of illness in the adult patient. Includes economic, cultural, and spiritual impact the illness has on the patient, family, and community. Addresses dynamic patterns of recovering from illness, including communication, coping, energy depletion, restricted mobility, pain, and quality of life issues. Considers strategies to facilitate recovery, prevent therapy complications, and optimize level of functioning. Prepares the student to function as a member of an interdisciplinary health care team in a variety of health care settings.

**631 Health Problems of Women.** 3 lecture hours. 3 credits. Focuses on advanced nursing practice related to logical health and illness changes of women. Includes pathophysiological, pharmacological, and nutritional management modalities. Develops clinical judgment in history and physical

assessment and decision-making in management of common health problems.

**635 Perinatal Nursing I.** 2 seminar and 6 clinical hours. 3 credits. Corequisite or prerequisite: NUR 500. Focuses on nursing assessment, diagnosis, and intervention with the family during pregnancy, labor, delivery, and the postpartum period.

**636 Perinatal Nursing II.** 2 seminar and 6 clinical hours. 3 credits. Prerequisite: NUR 500. Focuses on high-risk family during pregnancy, labor and delivery, and the neonatal and postpartum periods. Nursing assessment, diagnosis, and intervention related to health promotion and prevention are used with high risk families.

**641 Health Problems of Children I.** 3 lecture hours. 3 credits. Focuses on advanced nursing practice related to common developmental, health, and illness changes of children. Includes pathophysiological, pharmacological, and nutritional management modalities; develops clinical judgment in history-taking, physical assessment, and decision-making in management of common health problems.

**644 Nursing of Children I: Well and Minor Health Deviations.** 2 seminar and 6 clinical hours. 3 credits. Corequisite or prerequisite: NUR 500. Focuses on health needs of well infants and children and their families. Major organizing concepts are development, infancy through childhood, systems, individual and family, adaptation, and nursing process. Common minor health deviations and dysfunctional patterns in infancy and childhood and nursing assessment and intervention are presented within a nursing diagnostic framework.

**645 Nursing of Children II: Major Health Deviations.** 2 seminar and 6 clinical hours. 3 credits. Corequisite or prerequisite: NUR 500. Focuses on the health needs of infants/children with major long- and short-term health deviations and their families. Major organizing concepts are development, family systems, stress and coping, and nursing process. Major health deviations of infancy and childhood and nursing assessment and intervention are presented within a nursing diagnostic framework.

**646 Nursing in Adolescent Health Care.** 2 seminar and 6 clinical hours. 3 credits. Prerequisite: NUR 500. Focuses on the adolescent client and family using nursing assessment, diagnosis to plan intervention related to health promotion, maintenance, and common health problems. Emphasis will be placed on joint planning between nurse and adolescent to establish priorities and promote increasing involvement of the adolescent in decision making regarding health.

**654 Advanced Psychiatric-Mental Health Nursing I.** 2 seminar and 6 clinical hours. 3 credits. Corequisites: NUR 500, 506, and Group Dynamics. Examines nursing and behavioral concepts and applies them in clinical practice. Provides context for socialization as a specialist in psychiatric-mental health nursing.

**655 Advanced Psychiatric-Mental Health Nursing II.** 2 seminar and 6 clinical hours. 3 credits. Prerequisite: NUR 654. Addresses family theory and therapy principles and issues. Investigates family systems, social systems, and systems of health care. Provides supervised clinical practice with families selected to meet course and students' objectives and extends psychiatric-mental health nursing skills.

**656 Advanced Psychiatric-Mental Health Nursing III.** 2 seminar and 6 clinical hours. 3 credits. Prerequisites: NUR 654, 655. Provides synthesis of psychiatric-mental health nursing theory and focuses on groups in the community using theories related to group, change, consultation, organizational systems, and prevention. Prepares students to function competently with groups and individuals in community health-care settings.

**657 Advanced Child and Family Mental Health Nursing I.** 2 semester and 6 clinical hours. 3 credits. Corequisites: NUR 500, 506, group dynamics. Introduces the advanced practice role in child/family psychiatric nursing. Examines concepts and issues relevant to advanced practice and their application with children, adolescents and families served by the public mental health system.

**658 Advanced Child and Family Mental Health Nursing II.** 2 semester and 6 clinical hours. 3 credits. Prerequisites: NUR 657 or permission of instructor. Corequisites: NUR 508, 570, 655. Introduces competence-based brief psychiatric nursing interventions with children and families, with emphasis on cultural competence in service design and delivery. Examines the selected mental health problems presented by children and families served by the public mental health system.

**662 Primary Health Care of Families.** 2 seminar and 6 clinical hours. 3 credits. Prerequisite: permission of instructor. Provides concentrated study and clinical practice as a primary care nurse specialist. Utilizes family nurse practitioner skills in a variety of primary care clinical sites. Focuses on the application of family and chronic disease management theories and research to problems encountered in advanced clinical practice.

**664 Health Problems of Adults I.** 3 lecture hours. 3 credits. Focuses on advanced nursing practice related to common developmental, health, and illness changes of adults. Includes pathophysiological, pharmacological, and nutritional management modalities; develops clinical judgment in history-taking, physical assessment, and decision-making in management of common health problems.

**665 Health Problems of Adults II.** 3 lecture hours. 3 credits. Focuses on advanced nursing practice related to developmental, health, and illness changes of adults. Included are pathophysiological, pharmacological, and nutritional management modalities. Increases the students' knowledge and integration of essential clinical content and on the development of clinical judgment in history-taking, physical assessment, and decision-making in the management of common health problems.

**666 Nursing of the Well Adult.** 2 seminar and 6 clinical hours. Pre- or co-requisites: NUR 500, 511, and 631. Focuses on health needs and care management of well adults. Health promotion, illness prevention, wellness maintenance, and risk assessment provide the organizing concepts. Selected critical issues affecting men and women in their daily living, biological progression, and changing roles through adulthood and maturity will be addressed.

**669 Primary Care Nurse Specialist Preceptorship.** 3 clinical hours per credit. 1-6 credits. May be repeated. Prerequisites: Two clinical courses and permission of instructor. Applies relevant theories, concepts, and research findings to clinical care. Stresses development of clinical competence required in delivering primary health care.



**671 Nursing Research II.** 3 lecture hours. 3 credits. Prerequisite: NUR 570. Develops the student's understanding of research as scholarly activity in nursing. Examines external, internal, and technological influences on the definition of nursing problems. Explores a variety of research methodologies utilized to address these problems and investigates how the findings are communicated and utilized in both practitioner and academic communities.

**680 Evaluation of Outcomes and Quality in Nursing Practice.** 2 lecture and 2 field work hours. 3 credits. Prerequisite: NUR 508 or permission of the instructor. Focuses on the process of evaluating the delivery of nursing care, with particular emphasis on strategies to address evaluation of patient outcomes and quality of nursing care.

**681 Nursing Administration I.** 3 lecture hours. 3 credits. Explores individual and organizational factors which influence nursing administrative practice; analyzes relationships between organizational variables and their impact on the design and management of a department of nursing.

**685 Nursing Administration II.** 2 lecture hours and 2 computer laboratory hours. 3 credits. Examines methods of measuring nursing productivity in a variety of settings; describes use of automated systems to enhance nursing productivity; concentrates on those systems which can be applied to management of patient care in a clinical nursing division; uses computer-based systems as decision-support systems.

**686 Nursing Administration III.** 2 lecture and 2 computer laboratory hours. 3 credits. Analyzes systems involved in managing a department of nursing; identifies the role of nursing service in development of an institutional budget; describes automated systems which can assist nursing service administrators.

**691 Nursing Research Practicum.** 3 laboratory hours. 3 credits. Prerequisite: NUR 570. Participates in ongoing research. Implements research with faculty direction and supervision. Permission of instructor required.

**692 Advanced Practice in Nursing Administration I.** 2 seminar and 6 practicum hours. 3 credits. Focus is on planning and managing organizations for the cost-effective delivery of patient care. Provides students the opportunity to critically evaluate the management of human, material, and financial resources in health care institutions.

**695 Advanced Practice in Nursing Administration II.** 2 seminar hours, 6 practicum hours. 3 credits. Focuses on the integration of administrative theory and practice in health care institutions. Emphasizes enhancing the nursing administrator's skills in long-term and strategic planning.

**696 Advanced Practicum in Nursing.** 9 clinical hours. 3-6 credits. Prerequisites: specialty courses in the clinical major. (At least 2 of the 3 specialty courses must be completed; the third specialty course may be taken concurrently with this course by permission of departmental and course faculty.) Focuses on advanced nursing practice in the student's clinical major and on advanced clinical practice roles of clinician, teacher, administrator, consultant, and researcher.

**701 Theory Development in Nursing I.** 3 lecture hours. 3 credits. Prerequisite: admission to the doctoral program or permission of Associate Dean and course faculty. Explores

the structure of nursing knowledge by contrasting, analyzing, and critiquing concepts, theories and conceptual models of nursing to determine the contribution to nursing knowledge. Using selected concepts, conceptual-theoretical-empirical structures to answer research questions will be developed. Examines the emergence of nursing as a scholarly discipline.

**702 Theory Development in Nursing II.** 3 lecture hours. 3 credits. Prerequisite: NUR 701 or permission of Associate Dean and course faculty. Explores various philosophies of science and examines factors influencing the development of nursing theory and emergence of nursing as a scholarly discipline. Analyzes impact of economic, social, political, and scientific factors on discipline of nursing.

**721 Concept Analysis in Nursing Administration I.** 3 lecture hours. 3 credits. Prerequisite: admission to doctoral program. Identifies and examines concepts in nursing administration from the perspective of research relevant to the management of clinical patient care; includes patient classification and acuity systems; scheduling and staffing systems and their relationship to work outcomes, costs, quality of care, and other measures of productivity; evaluates organizational strategies which promote utilization of research findings in clinical practice.

**722 Concept Analysis in Nursing Administration II.** 3 lecture hours. 3 credits. Prerequisite: NUR 721. Identifies and examines concepts in nursing administration from the perspective of research relevant to management of nursing services and the role of the nurse executive. Includes job satisfaction, job design, and theories which attempt to explain and predict nurse supply, demand, and turnover. Examines the organizational context in which decision making occurs. Appraises the process of organizational change, growth, and decline.

**770 Advanced Nursing Research.** 3 lecture hours. 3 credits. Prerequisites: NUR 701, 702 (concurrent); SOC/STA 508 (or equivalent); SOC/STA 608 (or equivalent)(concurrent). Focuses on quantitative methodologies to investigate problems of interest in nursing research. Examines research design, data collection and analysis and ethical issues in the conduct of nursing research.

**781 Organizational Analysis in Nursing.** 3 lecture hours. 3 credits. Prerequisite: NUR 508, 681 or equivalent (i.e. graduate course in organizational theory); or permission of instructor. Evaluates concepts and theoretical models that attempt to explain organizational functioning and that are of particular usefulness in developing a substantive body of knowledge.

**782 Analysis of Health Care Policy as a Factor in Nursing Practice.** 3 lecture hours. 3 credits. Analyzes global and national issues in health care policy. Applies traditional and emerging models to policy issues. Examines policies having implications for nursing practice research and administration. Focuses on the environment of health care policy development, the agencies and leadership of policy development and implementation, and nursing's role in policy development, implementation, and evaluation.

**791 Special Topics.** 1-3 credits. Prerequisites: admission to doctoral program and permission of instructor. Explores specific topics in nursing administration.

**792 Directed Study in Nursing.** 1-3 credits. Prerequisites: admission to doctoral program and permission of instructor.

Independent study in a specific area of nursing developed under the supervision of a member of the graduate faculty.

**797 Directed Research in Nursing.** 1-3 credits. Prerequisites: 12 credits of doctoral-level course work and permission of instructor. Supervised investigation of selected problems in nursing research.

**798 Thesis.** 6 credits. The master's thesis constitutes carefully planned and executed research under the supervision of an advisor in conjunction with a thesis committee. The student writes and presents the required thesis in the area of clinical nursing interest.

**898 Dissertation.** 1-12 credit hours. Prerequisite: admission to candidacy. Original research.



# W P A R T V I

## SCHOOL ▼ OF ▼ ALLIED ▼ HEALTH ▼ PROFESSIONS

THOMAS C. BARKER, Ph.D.

Dean

LARRIE J. DEAN, Ph.D.

Associate Dean

DEBRA A. ROPELEWSKI, M.B.A.

Assistant Dean for Administrative and Fiscal Affairs

STEPHEN C. HARVEY, M.Ed.

Director of External Affairs

**T**he School of Allied Health Professions was established within the Medical College of Virginia of Virginia Commonwealth University on January 1, 1969.

A fundamental reason for the establishment of the School of Allied Health Professions was to provide an administrative structure for existing educational programs in allied health disciplines and to direct the development of new programs in response to the growing need for allied health manpower. At the outset, the school incorporated existing educational programs for hospital administration, medical technology, physical therapy, radiologic technology, and X-ray technicians. A program for nurse anesthesia was inaugurated as a separate department in 1969; an existing educational program in occupational therapy located on the Academic Campus was transferred administratively to the School of Allied Health Professions in 1970; also in 1970, a teaching program in patient counseling formerly based within MCV Hospitals was integrated with the school. Since 1974 baccalaureate programs in health care management, medical record administration, and radiation sciences, with specific concentrations in education and in

administration, have been established. A doctoral program in health services, organization, and research, the first for the School of Allied Health Professions, was introduced in 1982. In 1985 the existing Department of Gerontology was transferred administratively to the School of Allied Health Professions. In June 1988 an executive master's program in health administration was introduced. Also in 1988, the medical records administration program was renamed "health information management." An entry-level master's degree professional program in physical therapy was initiated for students matriculating in August 1989. The enlargement of selected programs and the development of future ones in health-related professions are anticipated.

The Commission on the Future of the University in its report approved by the University Board of Visitors on September 9, 1993 recommended that the Department of Rehabilitation Counseling be transferred from the School of Community and Public Affairs to the School of Allied Health Professions. Although at this writing (March 1994), the Department of Rehabilitation Counseling remains with the School of Community and Public Affairs, its activities are described in this section of the VCU *MCV Bulletin*.

### PROGRAMS

Departments and programs currently in this school and the degrees or certificates conferred on their graduates are

#### **Department of Gerontology**

Master of Science

Postgraduate Certificate in Aging Studies

Postgraduate Certificate in Aging Studies and Master of Social Work—offered in conjunction with the School of Social Work.

#### **Department of Health Administration**

Master of Health Administration

Master of Health Administration/Juris Doctorate—offered jointly with the T.C. Williams School of Law at the University of Richmond.

Master of Science in Health Administration (Executive Program)

Doctor of Philosophy majoring in Health Services, Organization, and Research

#### **Department of Clinical Laboratory Sciences**

Bachelor of Science majoring in Clinical Laboratory Sciences

Master of Science

#### **Department of Nurse Anesthesia**

Master of Science in Nurse Anesthesia

#### **Department of Occupational Therapy**

Bachelor of Science majoring in Occupational Therapy

Master of Science in Occupational Therapy

Master of Science

#### **Program of Patient Counseling**

Postgraduate Certificate in Patient Counseling

#### **Department of Physical Therapy**

Master of Science

Doctor of Philosophy—Physical Therapy track offered in conjunction with the Departments of Anatomy and Physiology, School of Medicine.

#### **Department of Radiation Sciences**

Associate in Science majoring in Radiologic Technology

Bachelor of Science majoring in Clinical Radiation Sciences

#### **Department of Rehabilitation Counseling**

Master of Science in Rehabilitation Counseling

Detailed descriptions of all graduate programs may be found in the *Virginia Commonwealth University Graduate Bulletin*.

### **PHILOSOPHY**

The faculty of the school is committed to offer, through the establishment and maintenance of rigorous standards of excellence, undergraduate and graduate education that will prepare students for professional careers in the several allied health disciplines. Development of professional attitudes, emotional maturity, and ethical behavior are vital components of the educational process. It is essential that students gain a deep respect for *the dignity of man* and the inherent rights of patients and others who receive services. Pro-

grams are designed to include not only the development of skills to assure excellence in quality of health care, but also such factual knowledge and experiences that will provide the basis for continuing intellectual and professional growth.

Community services of the school and faculty include continuing education, consultative resources, and participation in all pertinent areas of health care. An integral part of these efforts is to stimulate and sponsor research activities in the allied health disciplines represented within the school and to encourage interdisciplinary research.

### **FACILITIES**

Departments and programs in the School of Allied Health Professions are housed in the Randolph-Minor Annex, West Hospital Building, Newton House, VMI Building, Lyons Building, Grant House, Samuel Putney House, and McGuire Hall.

### **ACCREDITATION**

Virginia Commonwealth University and its component schools are accredited by the Southern Association of Colleges and Schools, the general accrediting agency for colleges in the region. The School of Allied Health Professions is an institutional member of the American Society of Allied Health Professions and the Virginia Association of Allied Health Professions. All of its programs are approved or accredited by the appropriate national professional or educational organizations.

### **LICENSURE/CERTIFICATION**

Graduates of most of the programs offered in the School of Allied Health Professions are required or eligible to take national/state certification of licensure examinations. Requirements of licensing and certifying agencies vary. Some licensure and certification agencies consider individuals convicted of a felony ineligible for licensure or certification. For specific information, prospective students should contact the licensure or certification agency for their allied health disciplines.

### **STUDENT PERFORMANCE AND BEHAVIOR**

The goals and objectives of the School of Allied Health Professions and its component departments and programs relate to the education of persons preparing for professional careers in the allied health disciplines. An integral requisite of each student and practitioner is an undeviating

acceptance of a professional attitude and pride that will motivate him/her to adhere to a code of professional ethics and to develop fully the competencies for practice.

Thus, the suitability of student performance and behavior relating to these professions and to the consumers of health care is a paramount concern of the administration and faculty of this school. Standards of conduct are presented in Part I of this bulletin and relate to the students in the School of Allied Health Professions. To assure a quality of educational and clinical preparation for its graduates, the following statement is also promulgated:

"If, in the judgment of the Faculty/Administration of the School of Allied Health Professions, a student is not considered suitable for emotional, professional, or related reasons, the student's academic status may be appropriately altered."

If any questions arise regarding standards of performance or behavior, it is the responsibility of students to apprise themselves of acceptable character and conduct requirements prior to matriculation in the designated department or program.

## ATTENDANCE REGULATIONS

The faculty considers attendance at lectures, laboratories, and other functions a requisite to the successful acquisition of the knowledge and skills required of the professional. The faculty cannot condone absence without good reason from any regularly scheduled educational experience. At the start of each course, the instructor will relate to the class the policy of his or her department concerning attendance regulations for that semester. The nature of make-up work in the event of absence will be the prerogative of the instructor.

## GRADUATE PROGRAMS

Graduate degree offerings in the School of Allied Health Professions are designated as basic professional or advanced-level programs. Accreditation requirements for the individual programs preclude the establishment of general school admission prerequisites, registration dates, and course and degree requirements.

It is the intent that the regulations and procedures for each program ensure the selection of applicants whose motivation, ability, character, and health status qualify them to successfully pursue graduate study. Specific information may be found in the *Virginia Commonwealth University Graduate Bulletin* or is available from the departmental graduate coordinator.

## COURSES OF INSTRUCTION (AHP)

Nearly all course offerings in the school are provided by departments and programs; however, selected courses considered applicable to many students in these programs have been assigned to the School of Allied Health Professions.

**351 Learning Theory.** Semester course; 3 lecture hours. 3 credits. Prerequisites: none. A study of the application of psychological principles to the teaching-learning process, with emphasis on practical applications.

**391 Special Topics.** Semester course; 1-4 credits. Prerequisite: permission of instructor. Interdisciplinary study through lectures, tutorial study, or independent research of selected topics not provided in other courses. Offered on undergraduate level.

**401 Instructional Strategies.** Semester course; 3 lecture hours. 3 credits. This course is designed to introduce the student to learning theory, instructional design, evaluation, and methodology. Emphasis will be placed on the study of applying principles and techniques of teaching in all areas of allied health education.

**425 Economics of Health Care.** Semester course; 4 credits. Examines topic of economics as it affects the field of health information management. Approaches broad economic and financial concepts as applied to policy-making in the health care industry. Emphasizes the budget process in health care institutions as it affects individual departments and how it requires accountability of each.

**491 Issues in Allied Health Education.** Semester course; 3 lecture hours. 3 credits. Prerequisites: none. A detailed study of three major components in allied health education: admissions, accreditation, and clinical relationships. The remainder of the course will be devoted to exploration of current issues identified by faculty and/or students, including those which arise during the student's education practicum.

**582 Supervision in the Allied Health Professions.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Study of the supervisory process and staff development, training in communication and interpersonal skills, and public relations within the health facility.

**591 Special Topics.** Semester course; 1-4 credits. Prerequisite: permission of instructor. Interdisciplinary study through lectures, tutorial study, or independent research of selected topics not provided in other courses.

**594 Health Education—Practicum.** Section 01, General. Section 02, NUA. Section 03, MT. Semester course; 1 lecture and 4 laboratory hours. 1-6 credits. Prerequisite: AHP 573. Preparation, presentation, and evaluation of selected educational experiences in the appropriate undergraduate program.

**596 Supervisory and Administrative Practicum in Allied Health Clinics.** Semester course; 60 clock hours. 1-9 credits. Section 01 MT. Prerequisite: permission of instructor. The course is designed for the student who will be assuming supervisory and administrative roles. Areas to be covered include clinical personnel management, budgeting and ordering of materials and equipment, consultation with physicians, developing and troubleshooting clinical methods,

designing job descriptions, and implementation of quality control programs.

Courses offered by the School of Education on the Academic Campus are generally oriented to graduate students interested in teaching, administration, or supervision.

## Department of Gerontology

### HISTORY

The gerontology department was founded in 1976. The M.S. majoring in gerontology, and a postgraduate Certificate in Aging Studies are offered. The Department of Gerontology became a part of the School of Allied Health Professions in January 1985. As part of the department, the Virginia Geriatric Education Center was established October 1, 1985. This center is a multidisciplinary effort involving cooperation of all the health-related professional schools and the College of Humanities and Sciences, Virginia Institute for Developmental Disabilities and the Virginia Center on Aging; its major focus is to promote education in geriatrics and gerontological health care.

### PHILOSOPHY

The basic philosophy of the department is to improve the overall well-being of elderly persons through the development of educational programs which are responsive to the changing psychological, physical, social, and political needs of the elderly population. Research, community service, and continuing education in gerontology and geriatrics are integral parts of this educational effort.

### OBJECTIVES

The purposes of the program are three-fold: (1) to train qualified professionals to work in administrative, planning, service delivery, and instructional/staff development positions in programs and services for the elderly at the national, state, and local levels; (2) to provide an opportunity for those studying in other disciplines, and whose work will encompass service to the aged, to integrate their own training with a comprehensive knowledge and understanding of the aging process; and (3) to stimulate the design and execution of gerontological research across multiple disciplines.

### FACILITIES

Offices of the gerontology department are located in the Randolph Minor Annex, 301 College

Street. Laboratory facilities for psychophysiological and pain research are housed in the Samuel Putney House, and facilities for health and clinical psychology-related research are located in the Randolph Minor Annex. The Virginia Geriatric Education Center, a part of the Gerontology Department, is located in the basement of the Lyons Building.

### HONORS AND AWARDS

**A. D. Williams Award.** An annual award is made to a student who demonstrates by virtue of high scholastic attainment and professional competence unusual promise and ability in the field of gerontology.

**Gerontology Student of the Year.** Each year the faculty chooses a graduating student who has exhibited outstanding scholastic achievement and demonstrated service in gerontology.

**Distinguished Alumni Award.** Each year the Gerontology Student Association, in consultation with the departmental faculty, chooses an alumna/alumnus who best exemplifies the standards of the profession.

### PROGRAMS

Four courses of study are offered:

1. A Master of Science degree with a concentration in one of the following six areas: Education Track, Health Care Organization and Planning Track, Psychogeriatrics Track, Public Administration Track, Social Services Track, or a Research Track.
2. A Master of Science degree majoring in physical therapy with a specialty in geriatric physical therapy is offered jointly with the Department of Physical Therapy.
3. A combination of the Certificate Program in Aging Studies and a Master of Social Work degree offered jointly by the School of Social Work and the Department of Gerontology.
4. A Certificate Program in Aging Studies to meet the needs of persons working with the elderly but who have no academic training in gerontology (now also available via telecourses).

*Further information on these programs, including specific admissions requirements and program descriptions, may be found in the Virginia Commonwealth University Graduate Bulletin.*

### MASTER OF SCIENCE PROGRAM IN GERONTOLOGY

The gerontology curriculum is a multidisciplinary program established in 1976 which offers

the Master of Science degree. The program utilizes professional assistance from departments on both campuses.

There are six concentration areas in gerontology:

**Education Track.** This area of concentration is designed for students interested in teaching/training careers in gerontology. Students electing this track will be prepared to provide instruction to university or community college students, the lay public, professional service providers, and older people.

**Health Care Organization and Planning Track.** (In conjunction with the Department of Health Administration) Upon completing this track, students will have a foundation of knowledge in health care organization, health planning, health policy, and a macro perspective of the financing of health care. In addition, students will have developed skills in policy analysis and the use of economic tools. Finally, students will broaden understanding of the political, legal, and ethical issues involved in health care organization and planning.

**Psychogeriatrics Track.** This area of concentration, developed jointly with the Department of Psychology, is designed for students interested in working with those older adults and their families who are experiencing psychological difficulty. Students electing this track will be prepared to provide assistance directly to the elderly and their families as well as to consult and train professionals and paraprofessionals to provide more effective mental health services. Training is provided through a combination of specialized didactic instruction and structured field experience in providing direct services, consultation, and education.

**Public Administration Track.** Students who elect to pursue courses in the public administration track, developed jointly with the Department of Public Administration, will after completion of course work, be able to plan, organize, report, control, and budget for public programs in aging. Grant writing and program evaluation skills will be developed as well.

**Social Services Track.** This track concentrates on developing specialized knowledge and skills in the provision of services to the elderly, basic understanding and skills in at least one method of social work practice, commitment and ability to participate in the development of strategies and policies relevant to amelioration of social problems of the elderly, ability to integrate and use in practice knowledge of individual behavior and social structure with reference to the needs of the elderly.

**Research Track.** This track is designed for students who would ultimately like to pursue a Ph.D. in social/behavioral sciences (all students who elect the research track must complete a thesis). Students will obtain a strong background in experimental psychology research design and methodology and a broad background in lifespan developmental theory.

The 42-hour degree program includes 21 hours of courses in gerontology, 15 hours in the chosen concentration area, and six credits for thesis (or a thesis option).

## FACULTY

### Professors—

Parham (Chair)	Ansello
Harkins	Osgood
Retchin	Scott

### Associate Professors—

Dougherty	Mulligan
Wood	

### Associate Clinical Professor—

Teitelman

### Assistant Professors—

Coogle	Finley
Pyles	

### Assistant Clinical Professors—

Jenkins	Orchowsky
Penberthy	Tucker
Wiggins	

### Instructors—

Decker	Meyers
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## GRADUATE COURSES IN GERONTOLOGY (GTU)

All students must successfully complete the following 24 hours of core courses:

**601 Biological and Physiological Aging.** 3 credits. Biological theories of aging: cellular, physical, systemic, and sensory change; health maintenance.

**602 Psychology of Aging.** 3 credits. Psychological adjustment in old age; special emphasis on personality, cognitive, and emotional development; life-crises associated with the aging process. (Students must complete Social Sciences Research Methods before taking this course.)

**603 Social Science Research Methods Applied to Gerontology.** 3 credits. Prerequisite: graduate statistics. Application of social science methods and techniques to study of the aged; data sources, types of problems encountered; data analysis; research reporting; use of research findings.

**604 Problems, Issues, and Trends in Gerontology.** 3 credits. Application of knowledge in analysis of problems confronting aged persons, social issues and legislation, service delivery programs, current trends in gerontology.

**605 Social Gerontology.** 3 credits. This course will focus on the socio-psychological and sociological aspects of aging. Various socio-psychological and social theories of aging will be discussed. The course will provide a broad overview of



several general topics such as the demography of aging, politics and economics of aging, and cross-cultural aspects of aging. The course will offer an in-depth analysis of particular role changes which accompany aging (i.e. retirement, widowhood, institutionalization).

**606 Aging and Human Values.** 3 credits. Identification and analysis of value systems of the aged, exploration of religious beliefs: death and dying; moral, ethical, and legal rights; human values and dignity.

**607 Field Study in Gerontology.** 3 credits. Systematic exploration and study in the field of an actual problem, issue, or task germane to the student's gerontology concentration. Application of specific concepts and approaches to assessment analysis. Arranged in consultation with the student's program advisor.

### Elective Courses

**410 Introduction to Gerontology.** 3 credits. A survey of the field of aging with attention to physical, psychological, social, economic, and cultural ramifications of age.

**501 Physiological Aging.** 3 lecture hours. 3 credits. Prerequisites: GTY 410 and one advanced (undergraduate) course in biology or physiology or permission of instructor. Provides an introduction to the rudiments of physiological changes associated with human senescence. Emphasizes current findings, theories, and methods in study of bodily changes in late life. Contrasts normal age-dependent changes in anatomy, physiology, and metabolism with chronic disease processes which increase in probability with age.

**612 Recreation, Leisure, and Aging.** 3 credits. An analysis of the quality and quantity of leisure in maximizing the quality of life for the older person. Focus will be placed on concepts of leisure, the interrelationship of leisure service delivery systems and other supportive services, the meaning of leisure to the elderly in the community and within institutional settings, and innovative programming.

**615 Aging and Mental Disorders.** 3 credits. The course deals with common psychological disorders and problems of late life, their etiology, methods of evaluating psychological status, and intervention strategies which have been used successfully with older persons. Topics include epidemiology of psychological disorders and mental health service utilization; late-life stressors and crises; psychology of health, illness, and disability; techniques and procedures in the evaluation of the older adult; functional and organic disorders; institutionalization; individual, group, and family therapy; behavioral techniques; peer counseling and crisis intervention; and drugs and the elderly.

**616 Maintenance and Rehabilitation in Late Life.** 3 credits. Considers practical approaches to maintaining function and use of daily activities, simple procedures, and techniques in counteracting common physical changes prevalent in later life.

**624 Community and Community Services for the Elderly.** 3 credits. A conceptual/theoretical overview of community focusing on the ecological, psychological, and social dimensions of community and on communities of the aged.

**625 Aging and the Minority Community.** 3 credits. An analysis of the relationship between the aging process and

American minority communities. In addition to the sociological factors, the course will examine demographic, physiological and psychological aspects of minority aging. Attention will also focus on dominant social problems and federal policies toward the aged.

**627 Psychology of Health and Health Care for the Elderly.** 3 credits. Focuses on factors in the etiology, course, and treatment of illness; patient/practitioner relationship; patient compliance and psychosocial issues in terminal care.

**641 Survey of Psychological Assessment and Treatment of the Older Adult.** 3 credits. A combination didactic and skills training course; review of major treatment strategies and techniques for utilization with the older adult client with emphasis on group, individual, and paraprofessional delivery systems; evaluation of crisis intervention and consultation team approaches; lectures, demonstrations, and classroom practice of actual treatment techniques.

**642 Practicum in Clinical Geropsychology.** 3 credits. An initial practicum geared as an entry to the team practicum experience; focus on familiarizing the student with mental health service delivery systems for the elderly in the Richmond community; rotation through a limited number of facilities such as nursing homes, retirement centers, nutrition sites, emergency hotline services for the elderly, and various agencies involved in de-institutionalization; and possible extended placement in a particular facility.

**691 Topical Seminar.** 3 credits. Seminars on specialized areas of gerontological interest. Examples of special topic courses taught in previous years: • Nutrition and Aging, 3 credits. Focuses on nutritional problems of the elderly, and physiological and psychological effects of diet modifications. • Psychophysiology and Neurobiology of Aging, 3 credits. Focuses on age differences and changes in anatomy and physiology of the autonomic and central nervous systems. • Wellness and Aging, 3 credits. Principles and concepts of wellness will be discussed with particular emphasis placed upon dealing with specific needs of the older adult. Relevant literature in the field will be reviewed. Psychological well-being and social alienation of older members of the community will be addressed from the wellness perspective.

\* **Pre-Retirement Planning.** 3 credits. Development and implementation of retirement planning programs for employees. Needs assessment, policy, adult learning, training resources will be covered.

\* **Long-term Health Care Services for the Elderly.** 3 credits. Historical, social, and political foundations are the focus of this course.

**692 Independent Studies.** 1-3 credits. Directed independent in-depth study of a particular problem or topic in gerontology about which an interest or talent has been demonstrated.

**798-799 Thesis.** 3-6 credits. A research study of a topic or problem approved by the thesis committee and completed in accordance with the acceptable standards for thesis writing.

## Department of Health Administration

Education in health administration at the Medical College of Virginia began in 1949 with the

establishment of a graduate curriculum in hospital administration. Early graduates received a certificate; the M.H.A. degree was awarded beginning in 1955.

These early efforts grew and developed into the Department of Health Administration established in 1972. The department now includes three major programs: (1) Ph.D. majoring in health services organization and research; (2) M.H.A. in health administration; and (3) Master of Science in Health Administration (Executive Program). A dual degree program is also offered which leads to award of the J.D. and M.H.A. degrees after four years of intensive study. In addition to these educational programs, the Department of Health Administration includes a growing research program and is involved in a wide range of public service activities including continuing studies for health services administrators and other health professionals.

## DEPARTMENTAL PURPOSE AND FUNCTIONS

The overall purpose of the Department of Health Administration is to provide educational programs and services related to the organization and administration of health services. In achieving that purpose, the department's principal functions are to provide high-quality education leading to careers in the administration of health care institutions, agencies, and systems and to provide advanced training and education for persons who will teach, plan, evaluate, and investigate health care policies and medical care systems. Corollary functions are to provide assistance and other services for community organizations and to conduct health services and health policy research.

## FACILITIES

The Department of Health Administration's graduate programs are located in the Grant House, an historic building located at 1008 East Clay Street on the MCV Campus.

The Medical College of Virginia Hospitals, one of the largest teaching hospitals in the nation, and the other MCV Campus clinical facilities are readily accessible to the department's students and faculty. In addition, the department has clinical affiliations and close working relationships with a large number of health care organizations and agencies in Virginia and throughout the eastern part of the United States. These organizations and agencies are used extensively as clinical facilities in the department's educational programs.

## ENDOWED AWARDS, LECTURESHIPS, AND PROFESSORSHIPS

The **Robert Hudgens Memorial Award** was established and endowed by the department's alumni association in cooperation with the American College of Healthcare Executives (ACHE). The Hudgens Award is presented annually to the person selected by a special ACHE committee as the most outstanding young hospital administrator in the United States. It is a major, nationally recognized award presented at the ACHE's Annual Congress each year.

The **Charles P. Cardwell Memorial Lecture-series** was inaugurated and endowed by the department's alumni. It is held in conjunction with the ACHE's Annual Congress. The series is coordinated by a standing committee of the department's alumni association.

The endowed **Arthur Graham Glasgow Professorship of Hospital Administration** was established in 1957 in honor of Dr. Glasgow, who had demonstrated a vital interest in hospitals and hospital administration.

The **Stuart D. Ogren Scholarship Fund** was established by institutional members of the Virginia Hospital Association, and Mr. Ogren's friends and colleagues in 1990. The fund honors Mr. Ogren who was President of the Virginia Hospital Association. During his distinguished career, Mr. Ogren made a significant contribution to the effective provision of medical care services in the Commonwealth and the formulation of health care policy in the Commonwealth and the Nation.

Scholarships, supported by a \$175,000 endowment, are available to students who have been admitted to the Department's graduate program in health services administration (MHA degree) program. Funds are employed to attract exceptionally well-qualified students (as defined by previous academic performance and work experience). The awardees are recognized each year at the Virginia Hospital Association's fall meeting.

The **Herman L. Mullins Award** is presented annually for the most outstanding thesis or management study completed by a graduate student in health services administration. This award was established by the M.H.A. Class of 1976 through the Health Administration Alumni Association as a lasting recognition for the contributions of Herman L. "Moon" Mullins as a teacher, advisor, and friend of the student.

The **Cardwell Society** was instituted in 1983 by departmental alumni to recognize those who annually make a major contribution to the De-

partment of Health Administration and in memory of the founder and first director of the then School of Hospital Administration, Charles A. Cardwell, Jr. The society was established to help maintain the traditions and quality of the department through support of its residency program, expanding computer-assisted educational programs, capital and equipment requirements, and other educational and operational needs.

The department has an ongoing, major capital campaign called the **New Ventures for Excellence in Health Administration Education**. This campaign will produce major capital funding to support student scholarships; (2) strengthening of the department's Administrative Residency Program; and (3) funding for the David G. Williamson, Jr., Institute for Health Studies.

Officially initiated in 1987, the **David G. Williamson, Jr., Institute for Health Studies** was named in memory of Mr. David G. Williamson, Jr., formerly the vice-chairman of the Hospital Corporation of America and one of the department's leading alumni. Mr. Williamson played a major role in making it possible for the institute to be established. The institute serves as a bridge between the department and administrative and clinical leaders in health care by sponsoring instructional, research, and outreach programs focused on the organization and financing of health services. Such programs are designed to help resolve the often conflicting requirement that health care organizations be simultaneously cost-effective, innovative, and responsible for serving society's needs.

A major activity developed by the institute is the **Executive Master's Program** in health administration. Begun in the summer of 1988, the executive program offers a 24-month master's program for individuals employed in the health care industry who are unable to interrupt their careers to return to school. Training draws upon a number of innovative educational methodologies, including on-campus intensives, computer and audio-conferencing, and a variety of other supporting media.

## PROGRAMS

1. The master's degree in health administration (M.H.A.) is designed to prepare individuals for administrative roles ultimately leading to top-level executive positions in complex health service organizations. The curriculum combines emphases in strategic and operational management, using both didactic and residency teaching environ-

ments. The program requires 58 hours of course work and a residency which varies according to the student's prior experience and education.

2. Advanced study in health administration and law is now available through a dual degree program cosponsored by the department and The T. C. Williams School of Law at the University of Richmond. The program leads to the awarding of the Master of Health Administration and Juris Doctor degrees. Participants are provided the necessary expertise either to represent clients within the health care industry or to function as legal policy makers or administrators who fully appreciate the legal environment of the health care field. Applicants for this program are required to meet the admission requirements of both programs. For information regarding the Dual Degree Program, contact the Director of the MCV-VCU M.H.A. Program.
3. The Executive Master's Program is an innovative course of study leading to the award of a Master of Science in Health Administration (M.S.H.A.) degree. The program is specifically designed for self-motivated, mature, and experienced professionals who are seeking advanced preparation in health administration. The program is designed to be completed while students are working full-time.
4. The Ph.D. in health services organization and research is a challenging 57-credit program that prepares individuals for positions as faculty, researchers, policy analysts, and top-level staff in complex health organizations. Students learn to apply research methods and scientific knowledge drawn from the behavioral and managerial sciences to the study of health organizations, services, and systems. The program is designed to meet the distinctive professional development needs of (1) *clinical professionals* who want to prepare for positions as faculty and independent researchers; (2) *administrative professionals* who want to prepare for positions as faculty, researchers, or consultants; and (3) *researchers and policy analysts* who want to create depth through specialization in health services organization and research.

Courses are distributed across four areas: foundations of health services organizations and research (9 credit hours); health services organization theory (12 credit

hours); health services research methods (18 credit hours); and an area of specialization (9 credit hours). Students take two written comprehensive examinations, covering health services organization theory and health services research methods. Areas of specialization are drawn from elective courses and from independent study with faculty members in their areas of expertise, such as long-term care, mental health services, managed care, quality management, or international health. The coursework is sequenced so that it can be completed in two years of full-time study or three years of part-time study (exclusive of dissertation credit). In addition, 9 credit hours of dissertation credit are required. Students orally defend a written dissertation proposal before their dissertation committee, write the dissertation, and orally defend the completed dissertation.

Further information on graduate programs, including specific admissions requirements and program descriptions, may be found in the *Virginia Commonwealth University Graduate Bulletin*.

## HONORS, AWARDS, AND SCHOLARSHIPS

**A. D. Williams Award.** This award is given to the student in each class who has achieved the highest cumulative grade-point average.

**A. D. Williams Scholarship.** This scholarship may be given to students in the graduate programs of the Department of Health Administration who demonstrate satisfactory academic progress and financial need.

**Herman L. Mullins Award.** This award is presented annually for the most outstanding thesis or management study completed by a graduate student in health services administration. This award was established by the M.H.A. Class of 1976 through the Health Administration Alumni Association as a lasting recognition for the contributions of Herman L. "Moon" Mullins as a teacher, advisor, and friend of the student.

**Leadership Award.** This award may be presented to graduating students in the master's degree programs of the Department of Health Administration who demonstrate significant leadership abilities and potential.

## PROGRAM OF CONTINUING EDUCATION

The Department of Health Administration's involvement in continuing education began in the early 1970s with the assistance of a grant from

the W. K. Kellogg Foundation that included continuing education as a principal component. The basic purpose of the department's program of continuing education is to provide educational services for persons who have administrative responsibilities in hospitals, medical centers, multi-unit systems, nursing homes, and other health care organizations and agencies.

## FACULTY

### Full-time Appointments

#### Professors—

Wan (Chair)	Barker
Begun	Breindel
Gross	Luke
Rossiter	Shukla

#### Associate Professors

Clement, J.	Dean
Hurley	McCue
Ozcan	Swisher

#### Assistant Professor—

Clement, D.

### Joint Appointments

#### Professors—

Cohen	Lanier
Mazmanian	Retchin
Witherspoon	

#### Associate Professors—

Mark	Smith, M.
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#### Affiliate Association Professors—

Fischer	Johnson
Larson	Liberman
O'Hallaron	Oulton

#### Assistant Professors—

Desch	Smith, T.
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#### Affiliate Assistant Professors—

Connatser	Dudley
Nayfield	Pyles
Rapp	

#### Affiliate Lecturers—

Blackwood	Halbert
Mattocks	Sartoris

## GRADUATE COURSES IN HEALTH ADMINISTRATION (HAD)

**602 Health Care Organization and Services.** Semester course; 3 lecture hours. 3 credits. Examines the structure and functions of the American health care industry, the concepts and processes of health and illness, the institutional and individual providers of health services, and related concepts.

**606 Financial Management in Health Organizations I.** Semester course; 3 lecture hours. 3 credits. Prerequisite: Financial Accounting. A theoretical and practical study of organization and functions of health care financial administration. Emphases are on institutional fiscal policies, accounting concepts and practices, internal and external controls, financial statistical reporting, and the use of financial data as management tools.

**607 Financial Management in Health Organizations II.** Semester course; 3 lecture hours. 3 credits. Prerequisite:

**HAD 606.** Advanced practices of health care financial management. Emphasis on techniques to aid in financial decision making. Areas of investigation and study include analysis of financial statements, cost allocations, reimbursements, rate setting, budgeting, and capital financing.

**608 Seminar in Health Care Finance.** Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 606 and HAD 607. Advanced studies of financial issues and the application of analytic tools in case studies and exercises. Designed to enhance and strengthen the knowledge and skills provided in the graduate program's foundation and required courses in accounting and finance.

**609 Health Systems Analysis and Evaluation.** Semester course; 3 lecture hours. 3 credits. Prerequisite: upper-division course in statistics. Introduction to principles and methods employed in evaluation research and program evaluation as these relate to health services. Focus will be conceptualization, design, and operation procedures used in program evaluation.

**610 Health Care Management Decision Support Systems.** Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 609. Applications of traditional industrial engineering techniques in health care institutions. Applications of operations research techniques to health care planning, control, and decision making including deterministic, and stochastic, and decision analysis models and their use in health services administration.

**611 Hospital and Medical Law.** Semester course; 4 lecture hours. 4 credits. Examines basic principles and practices of law affecting patients and medical practice: the legal aspects of patient care and treatment, medical services, other hospital/patient-related functions, and employment law.

**612 Health Information and Management Systems.** Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 609 and 610. Analysis of current information and management systems including: manpower planning and productivity, financial planning and monitoring, quality assurance, staffing and scheduling, administrative information systems, and patient care systems. Evaluation of alternative uses of computer technology in health care. Uses of national and organizational data bases.

**614 Health Marketing and Entrepreneurship.** Semester course; 4 lecture hours. 4 credits. Prerequisite: HAD 624. Examines the planning process in the context of both the community and the institution. Considers the essential components of planning and the development of a sound structure for planning. Examines the legal, regulatory, economic, and human factors that influence the planning process and addresses principles of health care marketing, with emphasis on marketing plans.

**615 Health Care Politics and Policy.** Semester course; 3 lecture hours. 3 credits. Examines the political process with particular emphasis on the impact of politics on health care. Focuses on current political issues in the health field, examining conflicts, and anticipating effects on the health system.

**623/Gerontology 623 Psychological Aspects of Illness and Disability.** Semester course; 3 lecture hours. 3 credits. An introduction to the theories and research in the field of health psychology. Topics include the application of psychological principles to the promotion and maintenance of health, prevention

and treatment of illness, relationship of stress and illness, patient/physician communication, stress and the health care provider, treatment compliance, changing self-destructive health behaviors, institutions and health care, and care for the terminally ill.

**624 Health Economics.** Semester course; 3 lecture hours. 3 credits. Develops an understanding of (1) economics as a managerial tool in making choices or decisions that will provide for an optimum allocation of limited health care resources and (2) economics as a way of thinking about and approaching issues of public policy in financing and organizing health and medical services. Individual research on crucial controversial issues in the health field.

**626 Comparative Health Systems.** Semester course; 3 lecture hours. 3 credits. Examines the structure and functions of health care systems in nations other than the United States.

**631 Managed Care.** Seminar course; 3 lecture hours. 3 credits. Prerequisites: two semesters of graduate work and permission of instructor. A seminar that examines the relationships between purchasers and providers of health care services and the development of new systems of financing and delivery that seek to improve performance and accountability.

**632 Personnel and Labor Relations in Health Institutions.** Semester course; 3 lecture hours. 3 credits. Examines the procurement, development, and maintenance of an effective work force. An analysis of staff development, health and safety, wage and salary administration, employee services, and labor relations.

**634 Case Studies in Assuring the Quality of Health Care.** Semester course; 3 lecture hours. 3 credits. Case studies that illustrate the relationship of administrative aims, strategies, tasks, and environment to the quality of health care. Examines the effects of health management, planning, and policy decisions on the delivery of health services.

**638 Administration of Long-term Care Facilities and Programs.** Semester course; 3 lecture hours. 3 credits. Focuses on unique knowledge and skills considered essential to effect long-term care administration. Emphasis is on the professional role of the long-term care administrator in providing for the health and social needs of the chronically ill and elderly. Applied skills in addressing the technical, human, and conceptual problems unique to LTC are addressed through cases and field exercises.

**645 Structure and Functions of Health Organizations.** Semester course; 3 lecture hours. 3 credits. Surveys concepts from organizational and management theories applicable to health organizational structure, strategy, and processes for health care organizations.

**646 Organizational Behavior in Health Organizations.** Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 602 or permission of instructor. Focuses on the major concepts, principles, and theories of management and behavioral sciences as they relate to human behavior in health care institutions and agencies.

**647 Operations Management in Health Care Organizations.** Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 603 and 646. Analysis of the current state of management study and practice with the objective of achieving

ing a balanced development of both knowledge and skills in solving the human problems of administration in health institutions. The managerial process is critically examined with emphasis on individual behavior and development, intergroup behavior, and behavior in the total organization.

**648 Strategic Management in Health Care Organizations.** Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 614 and 647. Integrative seminar on strategic decision making in health care organizations. Considers the concepts and alternative models of strategic management, the strategic management process, and the evaluation of strategic decisions.

**690 Departmental Research Seminar.** Semester course; variable credit. Research seminar that focuses on a research design and methods organized under a single topic or a series of related topics in health services research. Applied research training for master's level students.

**691 Special Topics in Health Services Organization and Research.** Semester course; 3 lecture hours. 3 credits. Prerequisite: two semesters of graduate work and permission of instructor. A seminar on the current state of knowledge and research within specialized areas of concern related to health services organization, planning, and assessment.

**692 Independent Study in Health Services Administration.** Variable credit. Offered in all semesters for students to investigate and study topics of major interests.

**693, 694, 695 Practicum in Health Services Administration I, II, III.** 2 credits-693; 3-5 credits-694, 695. Prerequisite: admission to the administrative residency. Examination of contemporary problems and issues in the organization, administration, and evaluation of health services. A principal focus is the application of alternative approaches to administrative problem solving. Special emphasis is placed on understanding of and appreciation for the internal and external factors that influence decision making in health care organizations.

**697 Directed Research.** Semester course; variable credit. Special course offered on demand for one or more students who will design and implement an applied research project in the field setting under the guidance of a faculty sponsor. Focus of the course will be on the application of research methods to policy or operational problems of health care institutions.

**701 Health Organization Design and Assessment.** Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 602. Analysis of medical care organizations at both micro and macro levels. Critical review of empirical research in organizational analysis and design. Identifies measurement issues related to the quality of care and to formulation of evaluative research on health services programs.

**702 Health Care Financing and Delivery Systems.** Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 624. Critical review and evaluation of major innovations in organization, delivery, and financing of health care services. Selected topics may include risk assessment analysis of alternative health care delivery systems and consideration of alternative public financing of health care.

**703 Strategies for Planned Change in the Health Field.** Semester course; 3 lecture hours. 3 credits. Reviews theories

and concepts of change and their application to health organizations. Emphasize internal organizational processes involved in planned change.

**704 Foundations of Health Service Organization Theory.** Semester course; 3 lecture hours. 3 credits. Examines the roots of foundational theories application to research on health care organizations and systems. Emphasizes the environment and structure of health care organizations and systems.

**705 Advanced Health Organization Theory.** Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 704 or permission of instructor. Contemporary perspectives in health organization theory are covered in depth, with emphasis on their research applications in health care organizations. Current examples of research on health care organizations using the perspectives are critically assessed.

**760 Quantitative Analysis of Health Care Data.** Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 624, HAD 609, or permission of instructor. Research course emphasizing computer application and statistical analyses of health care data generated from secondary sources.

**761 Health Services Research Methods I.** Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 609, HAD 761 and BUS 632, or permission of instructor. Introduction of advanced epidemiological principles and methods. Topics will include causal inferences from epidemiological studies, methods of analysis of epidemiological data, sociopathogenic factors in mortality and morbidity of specific chronic diseases, and designs of prospective or retrospective studies using a community as an epidemiological laboratory. Emphasis will be given to application of epidemiological methods to health planning, policy analysis, health services research and program evaluation.

**762 Health Services Research Methods II.** Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 609, 761, and BUS 632 or equivalent. Application of multivariate statistical analysis and evaluation research methods to health services research. Emphasis is placed on the use of advanced statistical methods and designs to analyze panel data in the health field.

**791 Special Topics in Health Services Organization and Research.** Semester course; 1-3 credits. Prerequisite: permission of instructor. Investigates a specialized content area in health administrative sciences in seminar format. Topics may change from semester to semester.

**792 Independent Study in Health Services Organization and Research.** Semester course; 1-3 credits. Special study or research leading to a publication. Conducted under the guidance of a faculty sponsor.

**793, 794, 795, and 796 Research Practicum.** Semester course; 1-3 credits. Supervised investigation of selected problems in health services research. Field research open only to second-year doctoral students who have completed the preliminary examination.

**798 Thesis I.** 3 credits. Independent research to provide the opportunity for the student to select, organize, and report the results of an investigation in a field of major interest.

**799 Thesis II.** 2 credits. Prerequisite: HAD 798. Continuation of research study begun in HAD 798.

**898, 899 Doctoral Dissertation in Health Services Research.** Semester course; Variable credits. Prerequisite: completion of required course work and comprehensive examination. Dissertation research under direction of faculty advisor. A minimum of nine semester hours required for Ph.D. degree.

For descriptions of courses in other schools and departments, see the current *Virginia Commonwealth University Graduate Bulletin* and/or *Virginia Commonwealth University Undergraduate Bulletin*.

## Department of Clinical Laboratory Sciences (formerly Medical Technology)

### HISTORY

Clinical laboratory scientists have been trained at MCV since 1932. However, the Department (formerly school) of Medical Technology was not formally established until 1952 at which time the curriculum included six months of didactic experience with lectures and laboratory sessions held in the department, followed by a six-month rotation through the clinical laboratories. The school offered a certificate and/or degree program which met the requirements of the American Medical Association as implemented through the Board of Schools of the American Society of Clinical Pathologists (ASCP). In 1961-62 the certificate program was discontinued, and all students accepted were required to have previously completed 90 semester hours which included medical technology prerequisites. Upon completion of the course, the students were awarded a Bachelor of Science.

Beginning with the 1974 fall term, the curriculum was expanded to the current two-year program. Students must have completed 60 semester hours including medical technology prerequisites before entrance into the baccalaureate program. In 1967 a graduate program was begun leading to a Master of Science degree in medical technology. In 1994, the department name was changed to Clinical Laboratory Sciences.

### PROGRAMS

The department offers the following two programs of study:

1. Bachelor of Science program. The junior year of the baccalaureate curriculum is devoted to lectures and laboratory exercises in hematology, biochemistry, immunology, blood banking, clinical microscopy, microbiology, parasitology, instrumentation, and basic concepts/laboratory techniques. During the summer between the junior and

senior years, students complete a four-week introductory clinical practicum in a Virginia hospital laboratory. In the senior year, students spend 15 weeks in a clinical rotation at a full-service, technologically advanced laboratory in a local hospital. The second semester of the senior year includes advanced courses in each medical science discipline, and instruction in management, education, and computer applications in the clinical laboratory. Certified medical laboratory technicians may partially fulfill course requirements of the program by transfer of credits and/or by successfully completing challenge examinations for certain courses.

Students may be admitted on a part-time basis in both fall and spring semesters. Because of course sequencing, students accepted part-time should contact the department upon notification of acceptance in order that a curriculum plan can be established prior to entrance into the program.

2. Master of Science program. The department offers two graduate level programs in clinical laboratory sciences.

The Advanced Master's program is designed for students holding a baccalaureate degree in clinical laboratory sciences (medical technology) and generalist certification. Candidates may specialize and complete a thesis in clinical chemistry, hematology, microbiology, immunohematology, immunology, or instrumentation/computer applications. In addition to the basic science requirement, each student will choose an area of secondary emphasis in biomedical research, education or management.

The Categorical Master's program in clinical laboratory sciences is designed for students with a baccalaureate degree in biology or chemistry. This option provides specialized study, including a clinical practicum, in one of the following areas: clinical chemistry, hematology, microbiology or immunohematology. A project or thesis is required. Upon completion of the program, students are eligible to take a national certification examination in the area in which they performed their concentrated study.

### PHILOSOPHY

The mission of the Department of Clinical Laboratory Sciences is to provide the student with superior theoretical and technical studies in



medical laboratory science, including both didactic and clinical education; to develop problem-solving expertise, leadership capabilities and good communications skills; and to provide flexible educational options for students of all ages and diverse backgrounds. Development of professional attitudes and ethical behavior are vital components of the educational process. A mature, responsible approach to the acquisition of the knowledge of medical laboratory science is cultivated in order to establish continuing intellectual and professional growth. The program is dedicated toward meeting the growing health care needs of the community by providing highly competent and professional clinical laboratory scientists who will be able to function effectively upon entrance into the field and be prepared to explore future scientific and technological advances in laboratory science.

## OBJECTIVES

The objectives of the Department of Clinical Laboratory Sciences are:

1. To provide an educational program which prepares students to accurately perform and evaluate analytical tests on body fluids, cells, and products.
2. To foster the development of professional conduct, interpersonal communication skills and ethical principles.
3. To develop and promote strategies for lifelong learning and to encourage continued professional growth through research, continued education and active participation in professional societies.

## ACCREDITATION

The Department of Clinical Laboratory Sciences is accredited by the National Accrediting Agency for Clinical Laboratory Sciences. The Bachelor of Science degree in medical technology is granted by VCU upon satisfactory completion of the prescribed curriculum. The student is then eligible to take the national examinations given by the Board of Registry of the American Society of Clinical Pathologists and the National Certification Agency for Medical Laboratory Personnel (NCMLP).

## FACILITIES

The Department of Clinical Laboratory Sciences is located in the Randolph-Minor Annex Building on the MCV Campus. All faculty and clerical offices are located in this facility, as well as student classrooms, general teaching labora-

tory, computer facilities, and a student lounge/reading room. An auxiliary instrumentation laboratory is located in McGuire Hall, approximately four blocks from the primary facility.

The teaching laboratories are well equipped with the latest instrumentation used in today's methods of laboratory medicine.

## HONORS AND AWARDS

**A. D. Williams Award.** An annual award may be made, on nomination of the faculty, to a student in each class who demonstrates by virtue of high scholastic attainment and professional performance, unusual promise and ability. Character, motivation, intellectual curiosity, and realization of the opportunities for personal development will be considered. The award is made at the end of the junior and senior years.

**Achievement Awards.** These awards may be given for each discipline in clinical laboratory sciences.

**Daria Downing Scholarship Award.** This award is in memory of Miss Daria Downing, who was the chief technologist of the clinical laboratories of MCV Hospitals from 1964 until her death in 1982. This award is given in December to an outstanding senior student in the Department of Clinical Laboratory Sciences.

**Kupfer Award.** This award was first given in 1965 in memory of Dr. Henry G. Kupfer, who was medical director of the School of Medical Technology from 1952 until his death in 1964. It is given to the senior who is considered to be the best all-around technologist. Throughout the program this student must demonstrate an outstanding sense of responsibility in all phases of clinical laboratory science, a keen concern for the patients, and the ability to work with others. The student must show a desire for personal and professional growth.

The selection of the student to receive the award is made by nominations from the clinical instructors in the various areas of rotations.

## FINANCIAL AID—GENERAL

Financial aid is available for all students meeting the criteria for financial assistance. Students should refer to the general section on financial aid in this bulletin for details of the programs available.

## BACHELOR OF SCIENCE PROGRAM

Clinical laboratory scientists receive training in the following areas: clinical biochemistry - the study of chemical reactions that occur in normal and diseased processes; hematology - the study



of the cellular elements of the blood and blood forming tissues; microbiology - the study of microbiological aspects of infectious disease, and the isolation and identification of pathogenic bacteria; blood banking - the application of theory and principles of cell typing, compatibility testing, and antibody identification; and immunology - the study of antigen and antibody interaction in the diagnosis of disease. With the rapid advancement of knowledge in the field of laboratory medicine, there is a growing need for highly skilled and knowledgeable clinical laboratory scientists. Employment is found in hospitals, physicians' offices, research facilities, forensic laboratories, biomedical electronic or instrumentation laboratories, industrial quality control, veterinary clinics, and sales and service of health care equipment. In addition to the technical arena, opportunities as managers or consultants exist for graduates of this program.

### ADMISSION REQUIREMENTS

To qualify for admission, a candidate must have completed a minimum of 60 semester hours of collegiate training in any college or university approved by a recognized regional accrediting agency. Accredited collegiate training in preparation for the study of medical technology, as for any professional career, should provide the opportunity for broad general education to include English, the social sciences, the arts, and the humanities. On entry to the department, the student must have completed 12 hours of chemistry (eight hours of general required; the remaining four hours in the order of preference: quantitative, organic, or qualitative; other courses may be accepted); 12 hours of biology (preferred four hours of general, four hours of human physiology, and four hours of human anatomy); three hours of mathematics; six hours of English, and six hours of humanities/social sciences.

**Special Admissions.** Certified medical laboratory technicians (or those eligible for certification) may qualify for special admission. An MLT applicant must have a minimum of 44 non-MLT semester hours of transferable credit for admission as a full-time student or 38 non-MLT semester hours for admission as a part-time student. The transfer hours must include eight hours of biology, eight hours of chemistry, three hours of mathematics, and six hours of English. MLTs admitted under special status are required to complete the science and the humanities/social sciences requirements for regular admission before they qualify for graduation. Transfer credits

are accepted for some CLS courses. Challenge examinations are offered.

Detailed information regarding admission requirements or the curricula may be obtained by writing to University Enrollment Services/Admissions, Medical College of Virginia Campus/Virginia Commonwealth University, P.O. Box 980632, Richmond, VA 23298-0632, or to the Department of Clinical Laboratory Sciences, Medical College of Virginia Campus/Virginia Commonwealth University, P.O. Box 980583, Richmond, VA 23298-0583.

### ACADEMIC REGULATIONS

The minimum passing grade for all professional courses leading to the Bachelor of Science degree is "D". All courses must be completed with a passing grade for the student to be eligible for promotion or graduation. Satisfactory completion of the previous semester's course work is a prerequisite to the next semester.

Promotion is based on recommendation of the faculty. The student is expected to:

1. maintain a grade-point average of 2.0 or better;
2. obtain a passing grade in all courses;
3. complete the clinical education requirements to the satisfaction of the clinical and academic faculty;
4. exhibit the attitudes and skills deemed necessary to function as a professional clinical laboratory scientist;
5. pay all fees.

Detailed grading policies plus the mechanism for grade appeals are given to each entering student during orientation.

### CURRICULUM

Variable credit is offered in consideration of the differing academic backgrounds of entering students. Semester hours given for each course are those required of the traditional student with no previous clinical training.

Junior Year	Semester Hours
CLS 300 Basic Concepts .....	1.5
CLS 301-302 Hematology .....	8.5
CLS 303 Parasitology .....	1.5
CLS 304 Clinical Microscopy .....	2.0
CLS 306 Immunohematology .....	4.5
CLS 307 Introduction to Pathogenic Microbiology .	3.0
CLS 308 Diagnostic Microbiology, Mycology, Virology .....	5.0
CLS 310 Clinical Immunology .....	4.5
CLS 311-312 Biochemistry .....	8.0
CLS 314 Clinical Instrumentation .....	3.0

**Summer Session**

CLS 337 Clinical Education .....	1.0
	<hr/> 42.5

**Senior Year**

CLS 407 Interpretive Immunohematology .....	2.5
CLS 408 Advanced Microbiology .....	2.0
CLS 409 Interpretive Hematology .....	2.0
CLS 410 Advanced Biochemistry .....	2.0
CLS 411 Principles of Education/Management .....	3.0
CLS 412 Clinical Correlations .....	1.0
CLS 414 Advanced Instrumentation .....	1.5
CLS 415 Special Topics in Clinical Laboratory Sciences (optional) .....	1-6
CLS 483 Biochemistry Practicum .....	3.0
CLS 485 Hematology Practicum .....	3.0
CLS 493 Clinical Microbiology Practicum .....	3.0
CLS 494 Miscellaneous Clinical Practicum .....	3.0
CLS 496 Blood Bank Practicum .....	3.0
CLS 438 Research Paper (optional) .....	1.0
	<hr/> 29-36

**FACULTY****Associate Professors—**

Lindsey (Chair)	dos Santos (Medical Advisor)
Karselis (Assistant Chair)	Sauer
Sommer	

**Assistant Professor—**

Nadder	Prentice
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**Affiliate Assistant Professor—**

Sauer

**Instructor—**

Einsmann

**COURSES OF INSTRUCTION (CLS)**

**201 Introduction to Medical Technology.** Semester course; 1 lecture hour. 1 credit. Presentation and discussion of the art of clinical laboratory science including an introduction to each of the specific areas of concentration and a tour of a hospital laboratory. Discussion of various job opportunities for the profession. Open to students on the Academic Campus who are interested in (medical technology) clinical laboratory sciences as a career.

**300 Basic Concepts.** Semester course; 1 lecture and 1 laboratory hour. 1.5 credits. An introduction to the basic concepts/techniques applicable to all laboratory science areas. Includes optical physics, quality control, laboratory safety, medical terminology, and pipetting techniques along with other basic subjects.

**301-302 Hematology.** Continuous course; 4.5 lecture and 8 laboratory hours. 2-9 credits. A study of the blood and blood-forming tissues. Emphasis is placed on hematologic techniques, accurate identification of normal and abnormal cells, and their correlation with normal or pathologic conditions. An introduction to the hemostatic mechanism is also presented.

**303 Parasitology.** Semester course; 1 lecture and 1 laboratory hour. 0.5-1.5 credits. A study of the life cycles of parasites and techniques used for isolation and identification of common parasites found in man.

**304 Clinical Microscopy.** Semester course; 1.5 lecture and 1 laboratory hour. 1-2 credits. A study of the principles and

practices of urinalysis, kidney function, gastric analysis, cerebrospinal fluid, and other body fluids.

**306 Immunohematology.** Semester course; 2.5 lecture and 4 laboratory hours. 2-5 credits. A study of the theory and principles of blood banking, with an emphasis on methods and techniques used in the laboratory for cell typing, cross-matching, and antibody identification.

**307 Introduction to Pathogenic Microbiology.** Semester course; 3 lecture hours. 0.5-3.5 credits. Fundamental principles of diagnostic pathogenic microbiology.

**308 Diagnostic Microbiology, Mycology, Virology.** Semester course; 3 lecture and 4 laboratory hours. 3-5 credits. The study of bacteria, fungi, viruses, antimicrobial susceptibility testing, and quality control; the relationship of bacteria, fungi, and viruses to infectious diseases including pathogenesis and epidemiology. Emphasis is placed on the techniques, methods, and procedures required to isolate and identify pathogenic microorganisms.

**310 Clinical Immunology.** Semester course; 3 lecture and 3 laboratory hours. 3-4.5 credits. Introduces the basic principles of immunology and serology. Emphasis is placed on laboratory evaluation of the immune response including both cellular and humoral aspects. Serologic techniques are practiced in the laboratory sessions.

**311-312 Biochemistry.** Continuous course; 6 lecture and 4 laboratory hours. 2-8 credits. A study of metabolism in normal and disease processes of the body. Emphasis is placed on the principles and methods used in testing bio-chemical reactions.

**314 Clinical Instrumentation.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Covers instrumentation found in clinical laboratories, including an introduction to electronic principles as applied to instrumentation. Course will examine the theory and application behind the various analytical methods used in clinical analysis.

**337 Clinical Education.** Summer course; 160 clock hours. 1 credit. Supervised clinical experience in hospitals across the state is designed to give the student a broader clinical education, and to provide venipuncture experience. In addition to the application of academically acquired knowledge, this affiliation provides an opportunity for the student to correlate each area of study into one composite picture for final laboratory diagnosis. Closer working relationships with other allied health personnel will be an important aspect of this affiliation.

**407 Interpretive Immunohematology.** Semester course; 2.5 lecture hours. 2-2.5 credits. Prerequisites: CLS 306 and 310 or permission of instructor. Advanced study of the principles of immunohematology, and immunology, with major emphasis on blood group systems and blood components. Includes the application of laboratory data and techniques to solve problems in blood banking and immunology.

**408 Advanced Microbiology.** Semester course; 2.0 lecture hours. 2 credits. Prerequisites: CLS 307 and 308 or permission of instructor. Advanced study of the principles of pathogenic microbiology. Includes the application of laboratory data and techniques to solve problems in the clinical microbiology laboratory.

**409 Interpretive Hematology.** Semester course; 2 lecture hours. 2 credits. Prerequisites: CLS 301-302 and 485 or permission of instructor. Advanced study of the principles of hematopoieses and their pathophysiological correlation to hematological disorders. Interpretation of morphological findings are correlated with case histories. Includes hemostatic problems.

**410 Advanced Biochemistry.** Semester course; 2 lecture hours. 2 credits. Prerequisite: CLS 311-312 or permission of instructor. An advanced study of intermediary metabolism and its relation to pathological disorders.

**411 Principles of Education/Management.** Semester course; 3.0 lecture hours. 3.0 credits. Introduction to the basic principles of educational theories and practice. Introduction to the basic principles of management and employee relations. Emphasis is placed on the application of these in the clinical laboratory.

**412 Clinical Correlations.** Semester course; 1 lecture hour. 1 credit. Seminars are presented on various aspects of professionalism and the interrelationships of the various laboratory disciplines are discussed during review sessions. A simulated registry exam is given at the conclusion.

**414 Advanced Instrumentation.** Semester course; 1.5 lecture hours. 1.5-2.5 credits. A basic introduction to computers and their application to the clinical laboratory. Laboratory and hospital information systems are discussed. Also included are the basic principles of instrument troubleshooting and preventive maintenance as well as a brief introduction to laboratory robotics. Students are required to complete a series of projects to satisfy the requirements for a contracted grade.

**415 Special Topics in Clinical Laboratory Sciences.** Semester course; 1-6 credits. Course provides for tutorial studies, laboratory experience, and/or library assignments in specialized areas for those students who have previous course work or laboratory experience in a specific subject.

**438 Research Paper.** Semester course; 1 lecture hour. 1 credit. This course is designed to introduce the student to the fundamentals of scientific writing.

**483 Biochemistry Practicum.** Semester course; 40-180 clock hours. 1-4.5 credits. Prerequisites: CLS 311-312. Individual participation in hospital chemistry laboratories. Students gain practical experience in the use of procedures and instruments by working with the staff. After gaining competence, students are expected to perform and sign out routine laboratory work under supervision.

**485 Hematology Practicum.** Semester course; 40-180 clock hours. 1-4.5 credits. Prerequisites: CLS 301-302. Students gain practical experience in the use of procedures and instruments by working with the staff. After gaining competence, the students are expected to perform and sign out routine laboratory work under supervision.

**493 Clinical Microbiology Practicum.** Semester course; 40-180 clock hours. 1-4.5 credits. Prerequisite: CLS 307-308. Individual participation in hospital bacteriology laboratories. Students gain practical experience in the performance and use of procedures by working with the clinical staff. After gaining competence, the students are expected to properly perform and sign out routine laboratory work under supervision.

**494 Miscellaneous Clinical Practicum.** Semester course; 40-180 clock hours. 1-4.5 credit. Prerequisites: CLS 301-302, 308, 310, 311-312, or permission of instructor. Students gain practical experience in the use of instruments and the performance of procedures by working with the clinical staff. After gaining competence, students are expected to properly perform and sign out routine laboratory work under supervision. Areas to be covered include toxicology, coagulation, and immunology/virology.

**496 Blood Bank Practicum.** Semester course; 40-180 clock hours. 1-4.5 credits. Prerequisite: CLS 306. Individual participation in hospital blood bank laboratories and Virginia Blood Services. Students gain practical experience in the use of procedures, instruments, donor drawing, and component preparation by working with the staff. After gaining competence, the students are expected to perform and sign out routine laboratory work under supervision.

## GRADUATE COURSES (CLS)

**495 Categorical Clinical Practicum.** Section 1-4. Semester course; 280 clock hours. 7 credits. Prerequisites: one or more of the following: CLS 301-302, 306, 307-308, 310, 311-312. Individual participation in a hospital laboratory in a selected specialty area - clinical chemistry, hematology, microbiology, or immunohematology. Students gain practical experience in the performance of procedures and use of instruments by working with the clinical staff. After gaining competence, the students are expected to properly perform and sign out routine laboratory work under supervision.

**501 Instrumental Methods of Analysis I.** Semester course; 2 lecture and 4 laboratory hours. 2-4 credits. Prerequisite: permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory, and comparison of laboratory instruments will be discussed in detail along with the factors affecting their operation. Two credit hours will be given students upon successful completion of the lecture portion of the course. Laboratory exercises have been designed to demonstrate the practical applications of the instruments studied in the research and clinical laboratory. Two additional credit hours will be given to students who elect and satisfactorily complete this option. Areas to be covered include spectrophotometry, fluorometry, flame emission photometry, and atomic absorption spectrophotometry.

**502 Instrumental Methods of Analysis II.** Semester course; 2 lecture and 4 laboratory hours. 2-4 credits. Prerequisite: permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory, and comparison of laboratory instruments will be discussed in detail along with the factors affecting their operation. Two credit hours will be given students upon successful completion of the lecture portion of the course. Laboratory exercises have been designed to demonstrate the practical applications of the instruments studied in the research and clinical laboratory. Two additional credit hours will be given to students who elect and satisfactorily complete this option. Areas to be covered include electrophoresis, chromatography, particle counters, radioisotope counters, and clinical laboratory automation.

**580 Principles of Education and Management.** Semester course; 3 lecture hours. 3 credits. Introduces principles of educational theories and practice and of management and

employee relations. Emphasizes application of these in the clinical laboratory. Requires a practicum in education and in management following the completion of the didactic portion.

**601 Theoretical Blood Banking.** Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of the instructor. A comprehensive study of the blood groups in man, including biochemistry, genetics, and clinical significance. Some topics relating to problems with antibodies to the blood groups will also be discussed.

**605 Advanced Hematology.** Semester course; 2-4 lecture hours. 2-4 credits. To enable the student to understand the basis for special procedures used in hematology and their application in differentiating blood dyscrasias.

**610 Interpretative Clinical Hematology.** Semester course; 2 lecture hours. 2 credits. Prerequisite: permission of instructor. The aim of this course is to present the principles of hematopoiesis and to study related pathological and pathophysiological correlation of hematological disorders.

**690 Medical Technology Seminar.** Semester course; 1 lecture hour. 1 credit. Presentation and discussion of current research and topics of interest by the departmental faculty, graduate students, and visiting lecturers.

**691 Special Topics in Medical Technology.** Semester course; 1-4 credits. This course provides for lectures, tutorial studies, and/or library assignments in specialized areas not available in formal courses or research training.

**696 Advanced Blood Bank Practicum.** 6 laboratory hours. 2 credits. Prerequisite: CLS 601. A laboratory course with practical experience in blood group serological testing, donor drawing, component preparation and donor processing. Discussion of unusual cases will also be a part of the laboratory course.

**790 Research in Medical Technology.** Continuous course; 1-15 credits. Research leading to the M.S. degree.

## Department of Nurse Anesthesia

### HISTORY

The Department of Nurse Anesthesia was the first new teaching program to be implemented in the newly organized School of Allied Health Professions at the Medical College of Virginia of Virginia Commonwealth University. The Master of Science degree in nurse anesthesia, which was initiated in 1979, is the first such offering through a school of allied health professions in the United States. The faculty believes that the master's degree level of education is fundamental to preparing diversified clinical specialists in nurse anesthesia, future teachers, coordinators, and directors of nurse anesthesia educational programs. A post-graduate Certified Registered Nurse Anesthetist (CRNA) Program has been offered since 1980.

### PROGRAMS

Two courses of study are provided:

1. Basic Professional Degree is designed for college graduates with current nursing licensure and a year's experience. The program is 28 months in length and includes didactic, clinical, and research components.
2. Postgraduate CRNA Program provides the postgraduate certified registered nurse anesthetist with a greater depth of study in the basic sciences and anesthesiology as well as skills in educational instruction, research, and consultation. The program is four semesters (16 months) in length.

Further information, including specific admissions requirements, curriculum, and course descriptions, may be found in the *Virginia Commonwealth University Graduate Bulletin*.

### CURRICULUM

First Year, fall semester	Credits
NUA 501 Principles and Practice of Nurse Anesthesia .....	4
PHC 531 Medicinal Chemistry for Nurse Anesthetists I .....	4
PMC 515 Pharmacology for Nurse Anesthetists I ....	3
PIO 501 Graduate Mammalian Physiology .....	5
	16
First Year, spring semester	
PHC 532 Medicinal Chemistry for Nurse Anesthetists II .....	3
PMC 516 Pharmacology for Nurse Anesthetists II ...	3
NUA 533 Pathophysiology: Anesthetic Considerations .....	3
NUA 590 Research Methods in Nurse Anesthesia Practice .....	3
NUA 551 Principles and Practice of Nurse Anesthesia II .....	3
	15
First Year, summer session	
NUA 555 Professional Aspects of Anesthesia Practice .....	3
NUA 573 Curriculum and Instruction in Nurse Anesthesia Programs .....	4
NUA 553 Biomedical Instrumentation for Nurse Anesthetists .....	2
NUA 552 Principles and Practice of Nurse Anesthesia III .....	3
	12
Second Year, fall semester	
NUA 699 Directed Research in Nurse Anesthesia OR .....	2
NUA 789 Thesis .....	6
NUA 631 Advanced Anesthesia Clinical Seminar I .....	1
	9
Second Year, spring semester	
NUA 699 Directed Research in Nurse Anesthesia OR .....	2
NUA 789 Thesis .....	2

NUA 594 Clinical Practicum II .....	6
NUA 632 Advanced Anesthesia in Clinical Seminar II .....	1
	<hr/> 9

**Second Year, summer session**

NUA 699 Directed Research in Nurse Anesthesia OR	
NUA 789 Thesis .....	2
NUA 692 Clinical Practicum III .....	6
NUA 633 Advanced Anesthesia Clinical Seminar III .....	1
	<hr/> 9

**Third Year, fall semester**

NUA 699 Directed Research in Nurse Anesthesia OR	
NUA 789 Thesis .....	2
NUA 692 Clinical Practicum IV .....	6
NUA 633 Advanced Anesthesia Clinical Seminar IV .....	1
	<hr/> 9

**FACULTY****Professors—**

Drain (Chair)

**Associate Professors—**

Embrey (Vice-Chair)

Moore

**Assistant Professors—**

Beeston

Bowman, B.

Bowman, T.

Christ

Hart-Bowley

Hartland

Hotchkiss

Johnson

Pontiffet

Reese

Rigoni

Shalenko

Smith

**Assistant Clinical Professors—**

Bradford

Hudalla

Hummel

Posnick

Spitzer

Wheat

**Clinical Instructors—**

Dunnivant

Weil

**COURSES OF INSTRUCTION (NUA)**

**501 Principles and Practice of Nurse Anesthesia I.** Semester course; 3 lecture hours. 4 credits. Fall semester. Introduces the beginning nurse anesthesia practitioner to those concepts necessary to plan and execute safe individualized anesthetic. Covers pre- and post-patient evaluation, formulation of the anesthesia care plan, anesthetic techniques, prevention of complication, fluid management, anesthesia procedures, monitoring, and application/maintenance of equipment.

**533 Pathophysiology: Anesthetic Considerations.** Semester course; 3 lecture hours. 3 credits. Spring semester. Pathophysiology of the neuromuscular, cardiovascular, respiratory, excretory and endocrine systems, infectious diseases, gastrointestinal disorders, nutritional disorders, connective tissue diseases, muscle, skin and bone disorders, and environmental and behavioral disorders. The pathophysiology will be studied in relationship to anesthetic considerations.

**551 Principle and Practice of Nurse Anesthesia II.** Semester course; 6 lecture hours. 6 credits. Spring semester. Delineates those practices and techniques of anesthesia management that are considered as situation-specific for specialized

procedures, diagnostic, or therapeutic procedures. Includes study of the theoretical and practical considerations involved in the administration and management of regional anesthesia.

**552 Principles and Practice of Nurse Anesthesia III.** Semester course; 3 lecture hours. 3 credits. Summer semester. Delineates those practices and techniques of anesthesia management that are considered as situation-specific for specialized procedures, diagnostic, or therapeutic procedures.

**553 Biomedical Instrumentation for Nurse Anesthetists.** Semester course; 2 lecture hours. 2 credits. Summer semester. A course surveying the basic essentials of Biomedical Instrumentation as utilized in those electronic devices most often encountered by nurse anesthetists. This course includes a brief descriptive review of the basic laws of electrical circuits and the physical principles of biophysical measurement.

**555 Professional Aspects of Anesthesia Practice.** Semester course; 3 lecture hours. 3 credits. Summer semester. Provides the student an opportunity to focus on a variety of nurse anesthesia practice settings. Studies the history of anesthesia, Nurse Anesthesia practice and the relationship of that practice in the development and growth of the American Association of Nurse Anesthetists.

**573 Curriculum Development and Instruction in Nurse Anesthesia Programs.** Semester course; 4 lecture hours. 4 credits. Summer semester. Covers curriculum development and instructional design, principles of teacher-learner communication and evaluation of learner growth and development pertinent to nurse anesthesia education. Explores relevant learning theories and implications for nurse anesthesia education.

**574 Teaching in Nurse Anesthesia Programs.** Semester course; 2 lecture hours. 2 credits. Spring semester. Prerequisite: NUA 573. Integrates theory with practical application. Requires that students select a clinical anesthesia topic, prepare a comprehensive manuscript, and present a detailed lecture with appropriate behavioral objectives supported with audiovisual techniques focused for a specific audience. (Post-Graduate only)

**590 Research Methods in Nurse Anesthesia Practice.** Semester course; 3 lecture hours. 3 credits. Spring semester. Required of all nurse anesthesia students. Understands and applies the steps involved in the research process. Emphasizes concepts, procedures, and processes appropriate for use in research. Develops a research proposal by exploring a topic in the area of anesthesiology. Applies inferential and Advanced Statistical tests to hypothetical data. Critically analyzes and evaluates anesthesia research studies.

**593 Clinical Practicum I.** Semester course; 675 clock hours. 6 credits. Fall semester. Introduces clinical care with supervised participation in actual administration of anesthesia. Demonstrates internalization of the theoretical concepts and techniques and application in anesthetic management. Emphasizes on assuming greater responsibility for total anesthetic regime.

**594 Clinical Practicum II.** Semester course; 675 clock hours. 6 credits. Fall semester. Provides intensive clinical experience in all clinical anesthesia areas. Emphasizes development of independent decision making. Includes clinical rotations to various affiliate sites to gain experience in man-

agement of specialized anesthetic considerations, and functioning in a variety of clinical settings.

**631, 632, 633, 634 Advanced Clinical Anesthesia Seminar I-IV.** Semester course; 2 lecture hours. 1 credit. Fall, Spring, Summer, and Fall semesters. Intensively covers the advanced concept and principles of anesthetic management. Includes individual and group presentations on specific assigned anesthesia topics from the current anesthesia literature. May be repeated for a maximum of 3 credits.

**692 Clinical Practicum III.** Semester course; 675 clock hours. 6 credits. Fall semester. Continuation of NUA 594. Continues intensive clinical experience in each of the clinical anesthesia areas, along with rotations to various specialized affiliate sites. Allows students to function with increased autonomy. Includes independent research and collection of clinical data to support anesthesia research project.

**693 Clinical Practicum IV.** Semester course; 675 clock hours. 6 credits. Spring semester. Continuation of NUA 692. Intensively applies to all previous clinical experiences to demonstrate development of independent thought and judgement and ability to function with minimum supervision. Reviews all clinical experiences in preparation for writing the certification examination conducted by the Council on Certification. Concludes all clinical requirements.

**699 Directed Research in Nurse Anesthesia.** Semester course. 2 credits. Fall semester. May be repeated up to 4 semesters. Students are required to take NUA 699 or NUA 789. Directed Research in Nurse Anesthesia provides the student an opportunity to gain experiences through guided library and practicum research in the area of anesthesiology. This research is executed under the supervision of an advisor and in conjunction with a research committee.

**789 Thesis.** Semester course. 2 credits. Fall semester. May be repeated up to 4 semester. Students are required to take NUA 699 or NUA 789. The master's thesis provides the student an opportunity to select, organize, and report the results of an investigation into a specific area of anesthesiology. This research is executed under the supervision of an advisor and in conjunction with a thesis committee.

## Department of Occupational Therapy

### HISTORY

The program in occupational therapy was initiated at Richmond Professional Institute in 1942.

In 1965 the graduate program leading to the Master of Science degree in basic professional education in occupational therapy was initiated. The School of Occupational Therapy became a department in the School of Allied Health Professions in 1970 after the creation of Virginia Commonwealth University.

### PHILOSOPHY

"Occupational therapy provides service to those individuals whose abilities to cope with tasks of living are threatened or impaired by development

deficits—the aging process, poverty, cultural differences, physical injury or illness, or psychologic and social disability."<sup>1</sup>

Humans, as complex biopsychosocial beings who possess an internal need to explore and master their surroundings, exist in an environment that requires them to maintain themselves and contribute to society and culture. These activities and tasks associated with peoples' roles and societal expectations comprise occupational performance.

When physical or mental illness, developmental deficits, or societal conditions alter individuals' abilities to adapt to, and to control, their environments, occupational therapists evaluate and intervene, using purposeful activity. Thus, occupation serves as both goal and means of therapy which is carried out within the context of the larger physical, social, and cultural environment.

Preparation of students to assume their future role in assisting their patients to develop, restore, or maintain their occupational functioning must include understanding of theory and concepts underlying human behavior and development, mastery of technical skills, and knowledge of the larger health care system. They must also be prepared to plan and manage their services, validate their practice, and educate others. This is accomplished by using a wide variety of teaching modalities and learning experiences, critical examination of accepted practices, and active involvement in their own learning.

### OBJECTIVES

The objectives of the Department of Occupational Therapy, in consonance with the mission of the University and the School of Allied Health Professions, are

1. to provide an atmosphere which fosters the development of student attitudes of commitment to personal and professional competence; which stresses student acquisition of professional skills along with the desire and means for lifelong learning; and in which faculty both guide and model these processes.
2. to provide an environment in which faculty strive for excellence in teaching, scholarship, and service; in which diversity is valued in both education and professional theory and practice.
3. to provide opportunities for therapists in the surrounding area to take courses and for

<sup>1</sup>From *Definition and Functions*. American Occupational Therapy Association.

those in the region to attend continuing education programs.

4. to foster research and scholarship to faculty to develop occupational therapy theory and to improve professional practice; educational experiences to enable students to be intelligent research consumers and to use methods of scientific inquiry in validation of their practice.
5. to recognize the humanities as an important base for professional practice and the utilization of a liberal approach to education for the profession.
6. to provide leadership in activities which serve to identify professional needs and assist in their resolution; involvement in occupational therapy and other relevant community services to meet particular education needs of students and to maintain faculty professional competence.

These objectives contribute to the primary purpose of the department, the education of well qualified, entry-level occupational therapists and professional leaders for the state and the nation.

### ACCREDITATION

Both the undergraduate and professional master's degree programs in occupational therapy at Virginia Commonwealth University are accredited by the American Occupational Therapy Association.

### FACILITIES

The educational facilities of the Department of Occupational Therapy are located in the VMI Building at the northeast corner of Tenth and Marshall Streets.

During the junior and senior years and the two years of the professional master's degree program, fieldwork assignments related to courses are made for students in a wide range of clinics and agencies in the Richmond metropolitan area. A minimum full-time 24-week extended fieldwork requirement will be arranged in approved clinical educational facilities through out the United States.

### HONORS AND AWARDS

**A. D. Williams Award.** An annual award presented to the student who has achieved the highest academic average each year in the undergraduate program and each year in the professional master's degree program.

### PROGRAMS

Four courses of study are offered:

1. A curriculum leading to the Bachelor of Science degree majoring in occupational therapy requires the completion of a minimum of 140 semester credits of work including over 960 clock hours of fieldwork experience. Twelve weeks of the fieldwork must be continuous.
2. A Master of Science degree majoring in occupational therapy designed for college graduates who wish to become occupational therapists. This program may be completed in two calendar years or may be individually designed for students who need a slower pace. The professional master's degree program includes academic courses, a research project, and a minimum of 24 weeks in full-time fieldwork.
3. A Master of Science degree program for registered occupational therapists. This post-professional master's degree program is individually designed in special areas of concentration. A minimum of 33 semester hours including a thesis is required.
4. A Master of Science concentration track for occupational therapists with interest and experience in hand management.

Detailed information on graduate programs including specific admissions requirements may be found in the *Virginia Commonwealth University Graduate Bulletin*.

### UNDERGRADUATE ADMISSIONS REQUIREMENTS

Students wishing to pursue a course of study leading to the Bachelor of Science degree in occupational therapy offered through the School of Allied Health Professions may be admitted after two years of college work. A total of 62 semester credits from an accredited college or university is required for entrance into the professional curriculum. Preference will be given to students who exhibit good potential for occupational therapy. An interview by *members of the Admissions Committee* is required in addition to information related to other criteria.

#### Prerequisites for Admission

English .....	6 semester hours
(Three credits of composition are required.)	
Biological Sciences .....	12 semester hours
Must include laboratory courses in human physiology and anatomy	
Psychology .....	12 semester hours
Must include developmental psychology and abnormal psychology	

Sociology .....	6 semester hours
Statistics .....	2 semester hours

These are considered minimum requirements. Students are encouraged to pursue further study in biology, psychology, sociology, liberal arts, and science courses which develop intellectual competence, enrich interest areas, and promote an awareness of a breadth of social and cultural values.

Criteria for admission include grade-point average, writing skills, volunteer or paid employment, and personal qualities.

Correspondence relating to the curriculum in occupational therapy should be addressed to the Chairman, Department of Occupational Therapy, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980008, Richmond, VA 23298-0008.

For application to the professional curriculum and catalog, requests should be addressed to University Enrollment Services/Admissions, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980632, Richmond, VA 23298-0632.

## CURRICULUM

<b>Junior Year, fall semester</b>	<i>Credits</i>
ANA 525 Functional Human Anatomy .....	4
OCT 301 Communications and Group Dynamics ....	3
OCT 309 Skills Laboratory I .....	3
OCT 414 Research Methods in Occupational Therapy .....	3
	<hr/> 13

<b>Junior Year, spring semester</b>	
ANA 529 Neuroanatomy .....	3
OCT 303 Developmental Tasks I and Occupational Roles I .....	2
OCT 305 Physical Dysfunction and Occupational Therapy I .....	3
OCT 306 Physical Dysfunction and Occupational Therapy II .....	2
OCT 307 Psychosocial Dysfunction and Occupational Therapy I .....	3
	<hr/> 13

<b>Senior Year, fall session</b>	
OCT 403 Development Tasks and Occupational Roles III .....	2
OCT 405 Physical Dysfunction and Occupational Therapy III .....	5
OCT 308 Psychosocial Dysfunction and Occupational Therapy II .....	3
OCT 409 Skills Laboratory III .....	3
OCT 411 Theories of Occupational Therapy .....	2
	<hr/> 15

<b>Senior Year, spring semester</b>	
OCT 407 Psychosocial Dysfunction and Occupational Therapy III .....	5
OCT 310 Skills Laboratory II .....	2
OCT 412 Administration and Supervision of Occupational Therapy Services .....	3
OCT 418 Occupational Therapy in Health Care .....	3
Elective .....	3
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## Fieldwork Sessions

OCT 493 Fieldwork—Psychosocial Dysfunction ....	1-9
OCT 494 Fieldwork—Physical Dysfunction .....	1-9
OCT 495 Fieldwork—Specialty (Optional) .....	1-9

Upon successful completion of the program, students are eligible to take the national certification examination administered by the American Occupational Therapy Certification Board. Certification is required by most employers as proof of professional competence.

## UNDERGRADUATE PROGRAM

To continue in the undergraduate occupational therapy curriculum, students are expected to maintain a cumulative grade point average (GPA) of 2.0 calculated on courses following matriculation and to demonstrate a level of competence in all subject matter.

1. Undergraduate students who fail to maintain a cumulative GPA of 2.0 at the end of the first period of enrollment and each subsequent semester, or accumulate more than one "D" grade in their OT curriculum (regardless of the cumulative GPA) will be placed automatically on probation and notified by the Committee on Academic Standing and Student Progress.
2. Students who receive an "F" grade in any required course will be considered for dismissal. If the Committee on Academic Standing and Student Progress decides that dismissal is not warranted, students will be automatically placed on probation.
3. Conditions of Probation — students must earn a quality point average the semester of probation sufficient to result in a cumulative GPA of 2.0. Students who are on probation due to "D" grades must retake all but one "D" grade course(s) as designated by the committee, achieving a grade of "C" or better while also meeting all other academic standards.

Conditions of probation may also include recommendations for academic counseling, assignments by individual instructors, and other requirements identified by the committee.

Only one semester of academic probation is permitted. Students who fail to meet academic standards during the semester of probation or do not successfully complete deficient courses will be considered for dismissal from the program.

Since courses are usually offered only once a year and since early courses serve as prerequisites for later courses, probationary students will have to continue under an



adjusted curriculum plan. This will result in extending the student's time in the program.

4. If a student withdraws or is terminated by the clinical facility before the completion of the Fieldwork Level II course because of poor performance or because of unsafe practices with patients, the student will receive an "F" grade for the course. If a student withdraws, is terminated, or fails a fieldwork experience, the course may be repeated only upon approval by the committee in consultation with the department chairman and the fieldwork coordinator. Students may be dismissed from the program or be allowed to continue contingent upon fulfilling remedial activities based on a plan prepared by the fieldwork coordinator and ratified by the Committee on Academic Standing. No more than one additional fieldwork experience will be rescheduled. Opportunity to re-register and repeat the fieldwork course is contingent upon the fieldwork coordinator's ability to locate another facility willing to offer a fieldwork experience to the student and the affirmative support of the committee.

Students who have not fully met the requirements for admission may be admitted into the undergraduate program on a conditional status. Advancement to full status may be approved by the Committee on Academic Standing and Student Progress when the student has satisfactorily completed one semester of full-time undergraduate studies. Students admitted on a conditional status will be considered for dismissal from the undergraduate program at the end of this first semester of undergraduate studies if they have not earned a 2.0 GPA. Conditional status is a probationary status; the requirements for advancement to regular status are specified in the student's conditional admittance letter prepared by the Undergraduate Admissions Committee.

5. To continue in good standing, students are also expected to
  - a. Pay all fees;
  - b. Maintain ethical behavior consistent with professional practice as defined in the Occupational Therapy Student Handbook; and
  - c. Complete fieldwork requirements to the satisfaction of clinical and academic faculty.
6. *Although arrangements are made in advance, students are reviewed prior to placement in*

Fieldwork II education. Students must have satisfactorily completed courses prerequisite to that field work experience and be recommended by the faculty. They must also demonstrate professional behavior as specified in the ethical behavior listed in the Occupational Therapy Student Handbook. Medical problems or emotional instability may delay or prevent fieldwork placement.

## FACULTY

Professors—	
Madigan (Chair)	Maurer, P.
Maynard	
Associate Professors—	
Brollier	Nelson
Watts	
Assistant Professors—	
Cash	Shepherd, J.
Assistant Clinical Professors—	
Gusich	Harrison
Osorio	
Clinical Instructors—	
Atherton	Dise
Ernst	Granger
Hanshaw	Moore, P.
Parker	Powell
Selznick	Smith, D.

## COURSES OF INSTRUCTION (OCT)

**301 Communications and Group Dynamics.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. This course is designed to introduce the occupational therapy student to the following: elements of effective communication in interpersonal relationships, nonverbal communication, problem-solving techniques, information-gathering techniques (observation, interview, documentary search, questionnaires), learning-teaching approaches, documentation, and use of medical terminology. The necessity of knowledge of these areas for appropriate professional communication is stressed.

**303 Developmental Tasks and Occupational Roles I.** Semester course; 1 lecture and 3 laboratory hours. 2 credits. Explores principles and theories of growth and development of occupational performance from infancy through adolescence. Focuses on assessment and sequential knowledge of sensorimotor, cognitive, and psychosocial performance skills related to self-care, play/leisure, school/work tasks, and life-stage roles. Caretakers, siblings, peers, and sociocultural influences on the developmental process are presented.

**305 Physical Dysfunction and Occupational Therapy I.** Semester course; 1 lecture and 6 laboratory hours. 3 credits. Physical and occupational performance problems prevalent in infancy through childhood will be studied. Explores occupational therapy assessment and intervention as a multi-variant approach in medical, educational, home, and community settings. A holistic approach is employed which considers the child's development of sensori-motor, cognitive, and psychosocial skills and the family's expectations and the sociocultural environment. Includes level-one fieldwork.

**306 Physical Dysfunction and Occupational Therapy II.** Semester course; 2 lecture and 3 laboratory hours. 3 credits.

Physical disabilities prevalent during adolescence will be examined. Detailed study of the role of the occupational therapist in evaluating and treating the special needs for this age group will be emphasized.

**307 Psychosocial Dysfunction and Occupational Therapy I.** Semester course; 1 lecture and 6 laboratory hours. 3 credits. Psychosocial stresses and pathologies which cause dysfunction during infancy through childhood will be the focus of this course. The roles and functions of occupational therapy in medical, educational, and community settings will be identified. Level-one fieldwork will be assigned as a portion of this course.

**308 Psychosocial Dysfunction and Occupational Therapy II.** Semester course; 2 lecture and 3 laboratory hours. 3 credits. This course will focus on common psychiatric disorders of adolescence and young adulthood followed by review of concepts and techniques of occupational therapy evaluation and intervention. Assigned level-one fieldwork will be included.

**309 Skills Laboratory I.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduction to use of activity for evaluation and treatment. Emphasis is placed on activity analysis and adaptation of various therapeutic media.

**310 Skills Laboratory II.** Semester course; 1 lecture and 2 laboratory hours. 2 credits. Three units of instruction: wood-working—use of hand and power tools, construction and finishing techniques, and their therapeutic application; ceramics—use of various non-wheel ceramic techniques and their therapeutic applications; and weaving—use of four harness looms and their therapeutic applications.

**403 Developmental Tasks and Occupational Roles III.** Semester course; 2 lecture hours. 2 credits. A study of adult ontogenesis and developmental tasks as they interrelate with adult occupational patterns. The course will examine work, productivity, leisure, retirement, and recreation in the adult years with emphasis on the importance of occupational success and balance for adaptation in adulthood and old age.

**405 Physical Dysfunction and Occupational Therapy III.** Semester course; 3 lecture and 6 laboratory hours. 5 credits. Dysfunction as the result of physical disabilities which commonly occur during the adult years will be analyzed. Specific disabilities will be identified and discussed. The theory and practice of occupational therapy intervention in a variety of settings will be presented. Level-one fieldwork will be assigned as a portion of this course.

**407 Psychosocial Dysfunction and Occupational Therapy III.** Semester course; 3 lecture and 6 laboratory hours. 5 credits. This course will focus on common psychiatric disorders of middle adulthood through old age, followed by review of concepts and techniques of occupational therapy evaluation and intervention. Assigned level-one fieldwork will be included.

**409 Skills Laboratory III.** Semester course; 6 laboratory hours. 3 credits. Three units of instruction which orient the student to the nature of work, work evaluation, and adjustment; activities of daily living and adaptive devices; and life skills.

**411 Theories of Occupational Therapy.** Semester course; 2 lecture hours. 2 credits. Examines theoretical constructs

which are used in various models of occupational therapy practice. Concepts integral to understanding and using human occupation as a basis for practice are emphasized. Current issues in practice are explored.

**412 Administration and Supervision of Occupational Therapy Services.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Covers the management of human and nonhuman resources to provide efficient and effective occupational therapy services; the nature of formal and informal organizations, the administrative process, and administrative tasks. Includes supervision, consultation, and the planning of occupational therapy fieldwork education.

**414 Research Methods in Occupational Therapy.** Semester course; 3 lecture hours. 3 credits. Covers the steps in the research process: problem definition, literature review, research design and data collection appropriate for occupational therapy, data analysis and interpretation, and research reporting. Emphasizes action research, evaluation research, and development of a research proposal.

**418 Occupational Therapy in Health Care.** Semester course; 3 lecture hours. 3 credits. This course will cover the impact and relationship of the following to occupational therapy: patterns of health care in the United States and abroad, current issues affecting the delivery of health care, and the allied health professions. The student will learn to analyze community health resources in terms of organizational structure, funding, purposes of services, and client eligibility and accessibility. The influence of these components on occupational therapy services will be stressed.

**491 Special Topics in Occupational Therapy.** Semester course; 3 credits. Designed around the interests of students, faculty expertise, and availability and expertise of Richmond area occupational therapists or visiting lecturers. Format may include intensive minicourses or workshops, an advanced course, with some knowledge and skills in a specialized area of occupational therapy.

**493 Fieldwork—Psychosocial Dysfunction.** Semester course; 1-9 credits.

**494 Fieldwork—Physical Dysfunction.** Semester course; 19 credits.

**495 Fieldwork—Specialty. (Optional).** 1-9 credits.

Minimum total required for all fieldwork courses. 18 semester hours. Determination of the amount of credit and permission of the instructor and department chairman must be secured prior to registration for the course.

Supervised fieldwork experiences are arranged in various settings for the application of academically acquired knowledge. Placements will include experiences in prevention, health maintenance, remediation, daily life tasks, and vocational adjustment. Fieldwork settings may include hospitals, rehabilitation centers, school systems, community agencies, penal systems, etc.

Fieldwork experiences are arranged individually, but placement in a specified location cannot be guaranteed. A minimum total of 24 weeks is required. Twelve weeks of this must be spent on a full-time basis. When equivalent time is used, the experience will be appropriate to the learning needs of the student and will meet the stated objectives of the field experience.

When the fieldwork extends beyond a grading period, an interim grade of "PR" will be assigned. In the event of failure,

the course may be repeated only upon recommendation by the academic and clinical faculty.

Fieldwork must be completed no later than 24 months following completion of the academic phase.

## GRADUATE COURSES (OCT)

**501 Basic Treatment Concepts and Skills.** Semester course; 1 lecture and 2-4 laboratory hours. 3 credits. Introduces important occupational therapy concepts: the influence of activity on health, the basic occupational therapy process, evaluation, motivation, and learning. Develops skill in observation and interviewing as data-gathering methods.

**503 Occupational Life Roles and Tasks I.** Semester course; 1 lecture and 3 laboratory hours. 2 credits. A study of growth and developmental processes and influences from infancy through adolescence, with primary focus on life roles and occupational performance skills related to self-help tasks, play/leisure tasks, and school/work tasks.

**504 Occupational Life Roles and Tasks II.** Semester course; 2 laboratory hours. 1 credit. This course will examine the development of occupational behavior in the adult portion of the life span. It draws upon concepts of time, role, habits, interest, and values to examine how the normal adult proceeds through occupational choice, worker roles, and retirement. The course also examines the balance of work and play and its change in normal development. Finally, the course will examine the effects and interrelationships of disability with normal occupational development in adulthood.

**505 Physical Dysfunction and Occupational Therapy Intervention I.** Semester course; 3 lecture and 6 laboratory hours. 5 credits. The focus of this course will be to identify and describe physical dysfunction seen in the continuum of health care in medical, educational, and community settings. A wide variety of evaluative and therapeutic approaches will be explored for the age range of infancy through adolescence. Assigned level-one fieldwork will be part of the course.

**506 Physical Dysfunction and Occupational Therapy Intervention II.** Semester course; 3 lecture and 6 laboratory hours. 5 credits. Beginning with the early adult years and continuing through the rest of the life span, the emphasis of this course will be twofold: (1) To identify and describe physically disabling conditions (acute and chronic) which interrupt occupational development and function during this age range; and (2) to apply the theories and principles of occupational therapy to the evaluation and treatment of physically disabled persons (acute and chronic) during this age range. Assigned level-one fieldwork will be part of this course.

**507 Psychosocial Dysfunction and Occupational Therapy Intervention I.** Semester course; 3 lecture and 6 laboratory hours. 5 credits. This course will focus on psychosocial pathologies which occur within the infancy through adolescence age span (including specific learning disabilities, mental retardation, and other diagnostic classifications). Theories and principles of occupational therapy intervention useful in medical, educational, and community settings will be explored. Assigned level-one fieldwork will be part of the course.

**508 Psychosocial Dysfunction and Occupational Therapy Intervention II.** Semester course; 3 lecture and 6 laboratory

hours. 5 credits. This course will introduce common psychiatric disorders of young, middle, and older adults followed by review of theoretical frames of reference and related occupational therapy evaluation and intervention methods. Assigned level-one fieldwork will be included.

**509-510 Activity Theory and Skills I and II.** Semester course; 1 lecture and 2 laboratory hours. 2, 2 credits. Analysis of student's activity skills in areas of play/leisure, self-care, homemaking, and work and development of skill in performing selected activities, including splintmaking. Emphasizes teaching, analysis, and therapeutic application of activities. Also stressed are evaluation and development of client's work, homemaking, and daily living skills.

**601 Advanced Theoretical Concepts in Occupational Therapy.** Semester course; 3 lecture hours. 3 credits. Prerequisites: OCT 312, 501, or student must be a registered occupational therapist. This course offers an advanced conceptualization of a generic theory base for occupational therapy. The course includes examination of the nature and organization of scientific knowledge, the medical model and other models of health care, sociological features of occupational therapy practice, and the study of human occupation and its disruption in illness.

**602 Research Methods in Occupational Therapy.** Semester course; 3 lecture hours. 3 credits. Covers the steps in the research process: problem definition, literature review, research design and data collection appropriate to occupational therapy, data analysis and interpretation, and research reporting. Emphasizes action research, evaluation research, and the preparation of a proposal for a thesis or project. Students with prior course work or experience in research may be permitted to take an elective instead of this course.

**603 Administration and Supervision of Occupational Therapy Services.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. The management of human and nonhuman resources in the provision of efficient and effective occupational therapy services; the nature of formal and informal organizations, the administrative process, and administrative tasks. Includes supervision, consultation, and the planning of occupational therapy fieldwork education.

**604 Theoretical and Therapeutic Application of Play in Occupational Therapy.** Semester course; 3 lecture hours. 3 credits. This course begins with a broad coverage of theory related to the motivation for play, the form and content of play, its developmental nature, and its relationship to health and adaptation. Following this theoretical introduction, the course focuses on practical application of play in occupational therapy (i.e., evaluating play behavior and remediating play dysfunction).

**605 Influences on Health and Health Care.** Semester course; 3 lecture hours. 3 credits. The nature of health, illness, and disability; the sick role; relationship between occupational therapy and the health care system; and current professional issues in occupational therapy.

**612 Occupational Therapy Assessment.** Semester course; 1-3 credits. Introduction to the theory of measurement. Selection, administration, and reporting of formal and informal assessments useful in occupational therapy. Processes of standardizing occupational therapy assessments.

**654 Occupational Therapy and Upper Extremity Dysfunction.** Semester course. 3 credits. Prerequisites: Hand management or post-professional master's degree matriculant or permission of instructor. Examines the occupational therapist's role in serving those with upper extremity dysfunction in the areas of work, leisure, and activities of daily living.

**690 Occupational Therapy Seminar.** Variable credits 1-3, may be requested for a maximum of 4 credits. Investigation, presentation, and discussion of current problems and issues in the field of occupational therapy.

**691 Special Topics in Occupational Therapy.** Semester course; 1-3 credits. Designed around the interests of students, faculty expertise, and availability and expertise of Richmond area occupational therapists or visiting lecturers. Format may include intensive minicourses or workshops, an advanced course, with some opportunity for election and development of knowledge and skills in a specialized area of occupational therapy.

**693 Fieldwork—Psychosocial Dysfunction.** 9 credits.

**694 Fieldwork—Physical Dysfunction.** 9 credits.

**695 Fieldwork—Specialty (Optional).** 6-9 credits.

Minimum total required for all fieldwork courses, 18 semester hours. Determination of the amount of credit and permission of the instructor and department chairman must be secured prior to registration for the course.

Supervised fieldwork experiences are arranged in various settings for the application of academically acquired knowledge. Placements include experiences in prevention, health maintenance, remediation, daily life tasks, and vocational adjustment. Fieldwork settings may include hospitals, rehabilitation centers, school systems, community agencies, camping programs, penal systems, and the like. Fieldwork experiences are arranged individually, but placement in a specified location cannot be guaranteed.

In the event of failure, the course may be repeated only upon recommendation by the academic and clinical faculty. Fieldwork must be completed no later than 24 months following completion of the academic phase.

**697 Independent Study.** 1-3 credits. This student will submit a proposal for investigating some area or problem in occupational therapy not ordinarily included in the regular curriculum. Student's topics of desired study must be identified with a contact from the student and approved by the faculty member. The results of the study will be presented in written or oral report.

**698 Research in Occupational Therapy.** Semester course; 3 credits. Completion of a department proposal for a research project relevant to occupational therapy.

**699 Research in Occupational Therapy.** Semester course; 3 credits. Completion of a research project relevant to occupational therapy.

**793 Clinical Specialty Practicum.** 1-4 credits. 3-9 hours of clinical experience in the student's chosen area of specialization under the supervision of an experienced clinician (minimum 3 hours per week for each clinical credit). Except for students in the hand management concentration track, requires registration for 1 credit hour for guided library research

and preparation of a paper examining the theoretical and empirical basis of an aspect of practice in the specialty area. Requires contract prepared by the student and approved by a faculty advisor and clinical supervisor.

**798 Thesis.** 3-6 credits. Completion of a departmental proposal for a master's degree thesis relevant to occupational therapy.

**799 Thesis.** 3-6 credits. Completion of a master's degree thesis relevant to occupational therapy.

## Program of Patient Counseling HISTORY

Patient counseling is the practice of communicating empathic concern, support, and sensitive counsel to the physically or emotionally troubled person. There is a long history of a concerted effort toward this end at the MCV Hospitals of VCU. With the appointment of the Reverend Dr. George D. Ossman as chaplain in 1943, the administration gave clear evidence of its awareness of the need for a specialized caring ministry to hospitalized patients and their families. The chaplaincy program was significantly expanded in 1958 and was accredited to begin the education and clinical training of persons in patient counseling. Patient counseling, as it exists today, became an integrated program in the School of Allied Health Professions in 1970.

## PHILOSOPY

With the rapid growth of health care and the increasingly complex problems of medical ethics and viable delivery systems, it is very important to educate qualified professionals to deal with the human dimensions of illness and the personal and family stress related to it. Through this program, VCU has an opportunity to make a needed impact upon health education through emphasizing the spiritual dimension of human needs related to crises of living. By so doing, the University has a significant role to play in the important task of keeping health care holistic and utilizing technical and scientific methodology in the context of a deep respect for the total life of persons.

## OBJECTIVES

The Program of Patient Counseling is designed to assist an individual to work in the health field as one skilled in dealing with the whole person in the context of life's crises and in a cooperative interprofessional team approach. The program is offered to persons who have an existing identity in a helping or counseling profession. This includes clergy, social workers, institutional coun-

selors, education specialists, psychologists, community health workers, and others in the health care professions.

**FUTURE PLANS**

A master's degree in patient counseling, emphasizing the practical and clinical competence of such counseling, is in the planning stages.

**FACILITIES**

Newton House is the base for the educational program, and limited space is available in clinical areas to work with individuals and families in crisis. The Main Hospital contains the chapel, family consultation room and administrative offices.

**ACCREDITATION**

The program is accredited by the Association for Clinical Pastoral Education, Incorporated, through the Virginia Cluster for Pastoral Education. Resident II students who have demonstrated competency in supervision and counseling are encouraged to present themselves for certification with the ACPE.

**CODE OF ETHICS**

The professional behavior of the student is expected to be in accordance with the Code of Professional Ethics, as adopted by the Association for Clinical Pastoral Education (Standards, 1993 and the Code of Ethics of The College of Chaplains, 1990). This code may be found in the offices of the faculty.

**PROGRAMS**

Students and residents serve in the dual capacity of providing service while learning. Night duty and weekend duty in rotation are required of all students in the program. Each student receives individual supervision by a member of the faculty.

Several courses are offered for individuals at different levels of experience and training:

1. Part-time programs are available for local students who wish to commute. This requires one or two days per week for 16 weeks (some overnights may be required). These programs are offered twice per academic year, in the fall and spring semesters.
2. A course for 10 weeks in the summer session is full-time and available to postgraduate students (some overnights may be required).
3. A Residency I-level year is available to five experienced applicants who have completed the semester and/or summer program.

4. A Residency II-level year is available to two selected applicants in advanced training who have completed the Residency I program.
5. A Residency III-level is available to selected applicants who have completed the Residency II program.

Residents receive stipends for services rendered. Information about stipends may be secured by contacting the chairman.

**ADMISSION REQUIREMENTS**

1. Fall and spring semester programs: B.A. or its equivalent or B.D., M.Div., M.A., Ph.D., or equivalent. Professional standing in the community. Personal interview with a member of the supervisory staff.
2. Summer session (10 weeks): B.A. or its equivalent. Enrollment in an accredited graduate school or its equivalent, or demonstration of professional competence. Personal interview with representative of the program.
3. Residency I: M.Div., M.A., Ph.D., or equivalent. Recognition in the professional community. Demonstration of personal competence. Personal interview with supervisory staff.
4. Residency II: M.Div., M.A., Ph.D., or equivalent. Professional standing in the community. Two to five years experience in chosen profession. An expressed interest in pursuing the supervisory training process. Demonstration of personal psychotherapeutic or counseling experience. Intern year in an accredited center. Personal interview with supervisory staff.
5. Residency III: All of Residency II requirements, plus at least one year of training in the MCV/VCU Patient Counseling Program.

**PATIENT COUNSELING CURRICULUM**

Residency I	Semester Hours		
	fall	spring	summer
PAC 551-552 Selected Issues in Health Care I II .....	1	1	—
PAC 553 Professional Identity, Function, and Ethics I .....	2	—	—
PAC 554 Professional Identity, Function, and Ethics II .....	—	2	—
PAC 555 Theory and Practice of Patient Counseling I .....	3	—	—
PAC 556 Theory and Practice of Patient Counseling II .....	—	3	—
PAC 593-594 Supervised Clinical Practicum I and II .....	4	4	—
PAC 561-562 Group Process I and II .....	2	2	—

PAC 597 Clinical Research .....	—	3	
PAC 595 Supervised Clinical Practicum III .....		5	
PAC 596 Practicum in Group Process .....		2	
PAC 592 Independent Study .....		2	
	12	12	12

#### Residency II

##### Required

PAC 551-552 Selected Issues in Health Care I and II .....	1	1	—
PAC 607-608 Advanced Group Process: I and II .....	2	2	
PAC 611-612 Clinical Pastoral Supervision: I and II .....	4	4	
PAC 697 Clinical Practicum in Research .....			3
PAC 691 Pastoral Counseling Practicum .....			5
PAC 693 Group Process Practicum .....	—		2
PAC 592 Independent Study .....			2
<i>Elective</i>			
PAC 603-604 Patient Counseling Evaluation I and II .....	5		
PAC 605-606 Pastoral Counseling Theory and Practice: I and II ....		5	
	12	12	12

#### Residency III

PAC 551-552 Selected Issues in Health Care: I and II .....	1	1	
PAC 607-608 Group Process .....	1	1	
PAC 694-695 Advanced Clinical Pastoral Supervision I and II ....	7	7	—
PAC 685-686 Supervised Pastoral Counseling Practicum I and II ..	3	3	—
PAC 696 Supervision Practicum ....	—	—	9
PAC 592 Independent Study .....			3
	12	12	12

#### Summer Intern Basic Program

PAC 500 Selected Issues in Health Care .....	1		
PAC 515 Basic Clinical Patient Counseling .....	7		
PAC 520 Use of Religious Resources in Patient Care .....			2
PAC 530 Introduction to Group Process .....			2
			12

#### FACULTY

Associate Professors—	
Mauney (Chair)	Young
Associate Clinical Professor—	
Dowdy	
Assistant Professors—	
Cain	Williams
Assistant Clinical Professor—	
Heckle	
Clinical Instructors—	
Faulkner	Festa
Lecturers—	
Arnold	Oglesby

#### COURSES OF INSTRUCTION (PAC)

The Program of Patient Counseling has an integrated curriculum in which the summer basic

intern- and residency-level students experience their core courses as a group. Exceptions to this rule are by faculty invitation only. Admission to any of the courses below is upon approval of the instructor. Students must be able to demonstrate competence in patient counseling.

#### Residency I

**PAC 551-552 Selected Issues in Health Care.** Semester course; 1 lecture hour. 1 credit. Presents theory, research, and technique in specialized topics of current interest. Offered fall and spring semesters. Undergraduate credit is given to those persons who do not hold baccalaureate degrees.

**PAC 553 Professional Identity, Function, and Ethics I.** Semester course; 2 lecture hours. 2 credits. Examines religious rituals appropriate for life's crisis points, such as illness, loss, guilt, birth, death, and marriage from the perspective of professional identity and functioning.

**PAC 554 Professional Identity, Function, and Ethics II.** Semester course; 2 lecture hours. 2 credits. Examines professional identity developmentally and conceptually. Presents and critiques key professional ethical issues, such as confidentiality, abortion, euthanasia, and patient rights.

**PAC 555 Theory and Practice of Patient Counseling I.** Semester course; 3 lecture hours. 3 credits. Emphasizes the role of the patient counselor, theological foundations, death and dying, and ministry to the poor and aging.

**PAC 556 Theory and Practice of Patient Counseling II.** Semester course; 3 lecture hours. 3 credits. Emphasizes psychological foundations of pastoral care and counseling, crisis intervention, human sexuality, marriage and family counseling, and pastoral counseling with addicts.

**PAC 561-562 Group Process I and II.** Continuous course; 2 lecture hours. 2 credits. Explores in small group settings, techniques and procedures common to group behavior and encourages relational skills and techniques.

**PAC 593-594 Supervised Clinical Practicum I and II.** Continuous course; 4 lecture and 14 clinical hours. 4 credits. Provides the opportunity to apply and practice interview and therapeutic skills with patients and their families under faculty supervision in selected areas of the hospital. Provides individual faculty supervision and critical review in seminars.

**PAC 595 Supervised Clinical Practicum III.** Semester course; 3 lecture and 7 clinical hours. 5 credits. Emphasizes the clinical aspect of students' research projects.

**PAC 596 Practicum in Group Process.** Semester course; 2 lecture hours. 2 credits. Continues PAC 561-562.

**PAC 597 Clinical Research.** Semester course; 1 lecture and 8 clinical hours. 3 credits. Completes an original project using the clinical areas of the hospital and presents this to the department.

#### Residency II

**PAC 603-604 Patient Counseling Evaluation I and II.** Continuous course; 4 lecture and 20 clinical hours. 5 credits. Evaluates the developing counseling ability in various patient

care situations and enhances the competence level. Evaluates patient counseling techniques and skills in patient care situations through case studies.

**PAC 605-606 Pastoral Counseling Theory and Practice I and II.** Continuous course; 8 lecture and 6 clinical hours. 5 credits. Explores issues and dynamics developed in the counseling relationship and involves critiques of two on-going counseling relationships.

**PAC 607-608 Advanced Group Process I and II.** Continuous course; 2 lecture hours. 2 credits. Utilizes small group interaction as a vehicle for learning relational skills and techniques.

**PAC 611-612 Clinical Pastoral Supervision I and II.** Continuous course; 4 lecture hours; 4 credits. Utilizes experiences of supervision and the literature in clinical supervision for those whose goal is to become certified as supervisors in clinical pastoral education.

**PAC 691 Pastoral Counseling Practicum.** Semester course; 2 lecture and 4 clinical hours. 5 credits. Prerequisite: PAC 605-606. Emphasizes increased competency in counseling through the use of audio and video tapes.

**PAC 693 Group Process Practicum.** Semester course; 2 clinical hours. 2 credits. Prerequisite: PAC 607-608. Utilizes a small, interactive group to experience group dynamics.

**PAC 697 Clinical Practicum in Research.** Semester course; 1 lecture hour and 8 clinical hours. 3 credits. Studies an area of specialty within the hospital and develops a competency in that specialty through original research and supervision.

### Residency III

**PAC 685-686 Supervised Pastoral Counseling Practicum I and II.** Continuous course; 4 lecture and 6 clinical hours. 3 credits. Prerequisite: PAC 605-606. Emphasizes the student's growing identity and competence as a counselor.

**PAC 694-695 Advanced Clinical Pastoral Supervision I and II.** Continuous course; 2 lecture and 15 clinical hours. 7 credits. Critiques the supervision of beginning students. Emphasizes gaining skill in the theory and practice of supervision, developing and administering an educational program; integrating an understanding of the person as seen from the various helping disciplines, and developing skill in group functioning and leadership.

**PAC 696 Supervision Practicum.** Semester course; 30 clinical hours. 9 credits. Provides opportunity under supervision for designing and conducting a clinical educational curriculum for basic students in patient counseling. Provides careful supervision and evaluation.

### Summer Basic Program

**PAC 500 Selected Topics in Health Care.** Semester course; 1 credit. Presents to the beginning students a variety of selected topics designed to help them understand the various forces at work in health care and the resources that are available.

**PAC 515 Basic Clinical Patient Counseling.** 7 credits. Assigns the student to selected areas of the hospital to practice and develop relational skills with patients and their families

as they adjust to the hospital situation: presents this work for peer and individual supervision.

**PAC 520 Use of Religious Resources in Patient Care.** Semester course; 2 credits. Covers religious rituals, methodology of usage, and philosophical and theological issues. Focuses on clinical material presented by students.

**PAC 530 Introduction to Group Process.** Semester course; 2 credits. Explores in a small group techniques, procedures, and relational skills common to group behavior.

**PAC 540 Foundation of the Person.** Semester course; 2 lecture hours. 1 credit. Provides a comparative look at theological and behavioral understandings of the person, with particular emphasis given to implications for health and illness.

### Courses Offered to Part-time Students

**PAC 510 Introduction to Patient Counseling.** Semester course; Variable credits. 2-5 hours. Provides an opportunity to practice and develop relational skills with patients and their families as they adjust to the hospital situation and to present this work for supervision and peer feedback in seminars and individual supervision. Offered fall and spring semesters. Special sections are offered to specialized professional groups.

**PAC 511 The Professional as Helper.** Semester course; 2 lecture hours. 2 credits. Utilizes the student's professional identity as a helping person to identify areas of growth and to develop a model for learning in these areas. Explores current literature in the field and application to the learning areas. Offered fall and spring semesters.

**PAC 521 Caregivers of the Dying and their Survivors.** Semester course; 3 lecture hours. 3 credits. Provides exposure to the phenomenon of death through literature, lectures, films, and discussions in the context of small group experience.

**PAC 551-552 Selected Issues in Health Care.** Semester course; 1 lecture hour. 1 credit. Presents theory, research, and techniques in specialized topics of current interest. Offered fall and spring semesters. Undergraduate credit is given to those persons who do not hold baccalaureate degrees.

**PAC 592 Independent Study in Patient Counseling.** 2-3 hours. Variable credits. Provides opportunity to increase clinical and interpersonal skills in specialty areas through patient care, parallel reading, and individual supervision.

## Department of Physical Therapy

### MISSION

The Department of Physical Therapy serves the people of the Commonwealth of Virginia and the nation by providing educational programs related to physical therapy. The department's primary function is to prepare the most qualified individuals for general physical therapy practice in an environment that encourages free inquiry and scholarship. Additional functions are to provide quality education leading to careers in teaching and research. Corollary functions are to pro-

vide assistance and services to the community and to engage in research and scholarly activities related to the practice of physical therapy.

## PHILOSOPHY

Physical therapy is an integral part of the health care system. Expanding knowledge in the basic and clinical sciences, and changes in the needs and mandates of society, continually place new demands on the physical therapy profession. The faculty of the Department of Physical Therapy is committed to providing educational programs responsive to expanding knowledge and the needs of society.

The primary principle directing the activities of the department is the faculty's commitment to optimal patient care through physical therapy education, research and practice. The faculty strongly believes that physical therapists must have a thorough understanding of the theoretical bases for treatment and skills in problem solving, evaluation, and communication. The faculty also believes that physical therapists have a responsibility to develop skills for life long learning, e.g., the ability to find information and to critically analyze that information.

The faculty is also committed to the development and sharing of new knowledge in the field of physical therapy through scholarship and research.

## OBJECTIVES OF THE DEPARTMENT

The objectives of the Department of Physical Therapy, in concert with the mission of the University and the School of Allied Health Professions, are to

1. provide an entry-level post-baccalaureate educational program for full-time students with diverse backgrounds and experiences;
2. provide an advanced master of science degree program with tracks in geriatric physical therapy, musculoskeletal physical therapy, and neurologic physical therapy to full and part-time community, state, national and international students;
3. contribute to a doctoral program which prepares physical therapists to contribute to the understanding and application of therapeutic procedures through basic and applied research and to teach both clinical and didactic physical therapy on all academic levels;
4. to provide an atmosphere which fosters critical thinking, intellectual curiosity and integrity, freedom of expression, personal growth and professional competence, and a

commitment to learning for faculty and students;

5. to provide an environment which facilitates research and scholarship directed toward optimizing patient care; and,
6. to provide services to the public and professional communities.

## FACILITIES

The educational facilities for the Department of Physical Therapy are located on the second floor of McGuire Hall and McGuire Hall Annex.

These buildings, located on the northwest corner of 12th and Clay Streets, house administrative and faculty offices, classrooms, physical therapy instructional and research laboratories, and student locker rooms and lounge. Classrooms and laboratories in other buildings on the MCV Campus are used as needed.

Clinical education experiences for professional students are offered in physical therapy clinics throughout Virginia and the nation.

## PROFESSIONAL PHYSICAL THERAPY PROGRAM

The goal of this program is to provide a quality educational program that prepares students for entry into the profession of physical therapy. The program prepares students to evaluate and manage patients with physical therapy problems effectively and in accordance with ethical principles. The program also provides students with strategies to continually define and meet their own educational needs in order to keep skills and knowledge current throughout their professional careers. Upon completion of the program, students are awarded a Master of Science degree.

### Objectives

Satisfactory performance in the experience provided in the Professional Physical Therapy Program prepares the graduate to:

1. apply the knowledge of the scientific basis of physical therapy evaluation, prevention, and treatment procedures to practice physical therapy in an effective manner.
2. evaluate and manage physical therapy problems in an ethical, legal, safe, and caring manner.
3. select and implement appropriate assessment procedures and, based in those procedures, formulate hypotheses about the physical therapy problems of patients.
4. select and implement physical therapy treatment procedures, and assess the effectiveness of those treatment procedures.



5. recognize when a patient requires: physical therapy treatment, treatment by another physical therapist, treatment other than physical therapy, and referral to a professional other than a physical therapist.
6. consider cost effectiveness when designing and implementing physical therapy services.
7. apply basic concepts and principles of management to effectively utilize and supervise supportive personnel, and to obtain appropriate resources to manage patient care.
8. apply basic educational principles to teach patients and their care givers, and to teach colleagues and other health care professionals.
9. apply basic principles of the scientific method to read and interpret professional literature, to participate in clinical research activities, and to critically analyze new concepts and findings.
10. demonstrate effective verbal and non-verbal communication with patients and their care givers, health care personnel, and members of the community.
11. demonstrate effective professional writing skills to present patient information to colleagues and to document physical therapy services in an organized, logical and concise manner.
12. demonstrate professional competence and a sense of responsibility to the patients, the community, and the profession.
13. demonstrate awareness that learning for and within a profession is a lifelong process.
14. demonstrate an awareness of the influence of social, economic, legislative and demographic factors on the delivery of health care.

### Accreditation

The Professional Physical Therapy Program is accredited by the Committee on Accreditation in Physical Therapy Education, American Physical Therapy Association.

### FINANCIAL ASSISTANCE

A limited amount of financial assistance is available for physical therapy students. The amount of assistance awarded the individual student is based on the availability of funds and the need demonstrated by the student. VCU provides three types of student assistance: scholarships, loans, and campus employment.

For information on financial assistance, write to University Enrollment Services/Financial Aid, Medical College of Virginia, Virginia Common-

wealth University, P.O. Box 980244, Richmond, VA 23298-0244.

### GENERAL ACADEMIC POLICIES AND REGULATIONS

All professional courses must be completed with a passing grade of "C" or better for the student to be eligible for promotion or graduation. Promotion is based on recommendation of the faculty. The student is expected to

1. maintain a grade-point average of 3.0 or better;
2. complete satisfactorily all noncredit activities;
3. obtain a passing grade in all courses;
4. complete clinical education requirements to the satisfaction of the clinical and academic faculty;
5. demonstrate personal characteristics that indicate commitment to the expectations of the profession of physical therapy and the educational program; and
6. pay all fees.

Additional policies and regulations are provided to entering students.

### ACADEMIC ADMISSION REQUIREMENTS

Prerequisites for admission to the entry-level physical therapy program include a minimum of 90 semester hours (or 120 quarter hours) in an accredited college or university. A grade of "D" in any required courses is not acceptable. A minimum grade-point average of 2.7 (in a 4.0 system) is required to be considered for admission. Scores from the Graduate Record Exam are required also. This program of study must include a minimum of:

1. English—6 semester hours of English. Advanced Placement or CLEP credits may be substituted for up to 3 semester hour credits. Courses in composition or scientific writing are strongly recommended.
2. Biological Sciences—12 semester hours, including laboratory experience. Must include one course in physiology. May include general biology or general zoology. No more than 4 credits in botany may be applied to meet this requirement. Advanced Placement or CLEP credits may not be used to meet these prerequisites.
3. Chemistry—8 semester hours of general chemistry with laboratory. Advanced Placement or CLEP credits may be used to meet these prerequisites.

4. Physics—8 semester hours of general physics, including laboratory experiences. Courses that emphasize mechanics, electricity, heat, and light are recommended highly. Advanced Placement or CLEP credits may be used to meet these prerequisites.
5. Mathematics—3 semester hours in mathematics. These credits must be in college algebra or trigonometry or equivalent. Advanced Placement or CLEP credits may be used to meet these prerequisites.
6. Statistics—3 semester hours in statistics.
7. Psychology—6 semester hours in psychology. Three semester hours must be in general psychology. Advanced Placement or CLEP credits may be used to meet these prerequisites.
8. Social Science—6 semester hours in social sciences, such as sociology, economics, anthropology, history, etc. Advanced Placement or CLEP credits may be used to meet these prerequisites.
9. Humanities—3 semester hours beyond what is listed above.

Approximately 60 of the 90 hours are thus specified. At least 8 hours of electives must be upper-level courses.

In order to complete the social science, psychology, and humanities requirements, students are encouraged to choose courses from the following categories: child, adolescent, or abnormal psychology; personality; development; psychology of adjustment; sociology; anthropology; economics; history; philosophy or logic; counseling; and human relations.

In order to complete the total requirements, students are encouraged to elect courses from the following categories: computer science, embryology, histology, comparative anatomy, vertebrate or human anatomy, kinesiology, physiology, foreign languages, and courses in physical education dealing with an analytical approach to human movement or motor learning.

## CURRICULUM PLAN FOR ENTRY-LEVEL MASTER OF SCIENCE DEGREE—FIRST PROFESSIONAL DEGREE

### First Professional Year (Senior Year)\*

Fall Semester	Semester Credits
PHT 505 Applied Microscopic Anatomy for Physical Therapy .....	4
PHT 506 Functional Neuroanatomy .....	5
PHT 510 Rehabilitation I .....	3
PIO 461 Introduction to Human Physiology .....	3
	15

### Spring Semester

PHT 501 Gross Anatomy .....	9
PHT 502 Kinesiology .....	5
PHT 537 Rehabilitation II .....	2
PHT 512 Clinical Problem Solving I .....	2
	17

### Summer Semester

PHT 520 Clinical Education I .....	3
*May be extended curriculum, i.e., semesters longer than 15 weeks.	

### Second Professional Year (G-1)

#### Fall Semester

PHT 507 Clinical Biomechanics .....	3
PHT 531 Scientific Inquiry .....	2
PHT 539 Foundations for Neurophysiologic Physical Therapy .....	3
PHT 508 Measurement and Assessment .....	6
PAT 540 Pathology .....	2
PHT 690 Physical Therapy Seminar .....	1
	17

#### Spring Semester

PHT 540 Neurologic Physical Therapy .....	6
PHT 544 Orthotics and Prosthetics .....	2
PHT 546 Clinical Medicine .....	2
PHT 533 Physical Agents .....	3
PHT 548 Orthopedic Physical Therapy .....	4
PHA 504 Pharmacotherapeutics .....	1
	18

### Summer Semester

PHT 550 Clinical Education II .....	5
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### Third Professional Year (G-2)\*

#### Fall Semester

PHT 621 Electrotherapy .....	3
PHT 623 Cardiopulmonary Physical Therapy .....	3
HAD 602 Health Care Organization and Services .....	3
PHT 625 Clinical Problem Solving II .....	1
PHT 627 Geriatric Physical Therapy .....	2
PHT 631 Professional Issues .....	3
	15

\*During the third professional year, students will complete a terminal project.

#### Spring Semester

PHT 632 Clinical Education III .....	8
Total Credits on MCV Campus .....	98
Prerequisites .....	90

Credits for M.S. in Physical Therapy 188

The above curriculum plan is under continuous review by the faculty. Course sequencing and titles are subject to change.

## ADVANCED GRADUATE (POST-PROFESSIONAL) PROGRAMS

The Department of Physical Therapy is committed to improving physical therapy services through advanced education. The department offers a Master of Science degree program for persons who have completed their physical therapy training. A doctoral program is offered in cooperation with the Department of Anatomy.

### Admissions Requirements

Applications are encouraged from individuals who are practicing physical therapists. Appli-

cants must have graduated from a physical therapy educational program approved by the American Physical Therapy Association. International students must have an equivalent level of education as determined by the Physical Therapy Advanced Graduate Studies Committee. Individuals who are no physical therapists are not accepted into the advanced degree programs.

Additional admissions requirements for graduate study in the Department of Physical Therapy are as follows: (1) a minimum GPA of 2.7 on a four point scale for entry-level professional education; (2) satisfactory score on the general test of the Graduate Record Examination (taken no more than 5 years prior to admission); (3) three satisfactory letters of recommendation; (4) applicant's written statement of intent for pursuing graduate studies in a particular specialty track; and (5) such additional requirements as may be established for individual specialty tracks.

International students must also score a 600 or above on the Test of English as a Foreign Language (TOEFL).

### Financial Assistance

Some teaching and research assistantships are available from the Department of Physical Therapy. These assistantships are competitive with doctoral students given first priority. Part-time employment as a physical therapy clinician is available in Richmond and surrounding areas. Doctoral students receiving stipends must receive approval of outside employment.

VCU provides three types of student assistance: scholarships, loans, and work study. For information on these types of financial assistance, write to the Financial Aid Office, Medical College of Virginia Campus, P.O. Box 980244, Richmond, VA 23298-0244.

### Advanced (Post-Professional) Master of Science Program

The objective of the program is to train physical therapists in research, education and clinical problem solving skills so that they will be the clinical and academic researchers and teachers of the future.

**Program Goals:** At the completion of the program the student will:

1. demonstrate an advanced ability to analyze the theoretical basis of measurement and treatment procedures;
2. demonstrate skills in clinical or basic science research;

3. demonstrate skills in teaching clinical examination and clinical therapeutic procedures;
4. demonstrate advanced clinical problem solving skills;

Specialization tracks allow the student to focus on a specific interest area. Currently specialization tracks are in the areas of neurological and musculoskeletal rehabilitation. Both tracks are designed to improve the knowledge base of the students in their chosen area of interest, as well as to help the student develop skills in critical thinking and problem solving.

Each student enrolls in core courses within the specialty area and elective courses that implement the core courses. In order to optimize the educational experience the faculty have developed recommended sequences of courses in each of the specialty tracks. Students may elect graduate courses offered by any University department, in addition to courses offered by the physical therapy department. Independent study with a faculty member is encouraged. Students may elect to participate in an optional clinical specialty practicum under the guidance of a clinician who possesses advanced skills in the student's area of interest. The completion of a thesis under the direction of a faculty advisor is also a requirement of each of the tracks. Students may study on either a part-time or full-time basis.

### General Academic Policies and Regulations.

To qualify for the Master of Science degree, students must meet the following requirements: (1) achieve an overall grade-point average of 3.0 on a four point scale for all graduate course work; (2) complete a minimum of 25 course credit hours exclusive of thesis credits; and (3) satisfactorily complete the thesis and oral defense of the thesis.

**Specialization Tracks.** One of the follow specialty tracks is selected before admission to the program.

#### 1. Neurologic Track

The curriculum provides the opportunity for physical therapists to critically analyze movement dysfunctions seen as a result of neurological pathologies using current theories of normal motor control and motor development. A framework is provided for the student to scrutinize commonly used neurologic physical therapy evaluation and treatment routines. Each student is required to assist in teaching one of the clinical

courses in the professional program curriculum. The student may focus on neuro-pathokinesiology, motor development, or aging. The student plans and conducts a research study in the area of motor control or motor development.

## 2. Musculoskeletal Track

The curriculum provides the physical therapist an opportunity to integrate facts and principles related to the musculoskeletal system. Issues related to the biological, biomechanical, and clinical sciences are explored. Following completion of the program the student will be able to apply this knowledge to the examination and rehabilitation of individuals with musculoskeletal problems. The curriculum emphasizes the integration of didactic, research and clinical knowledge. In addition the student must assist in teaching material related to the musculoskeletal system in the professional program curriculum. The student plans and conducts a research study relevant to the evaluation or treatment of patients with musculoskeletal problems.

Specific objectives and sequences of courses for each specialty track can be obtained by writing the Coordinator of Advanced Graduate Studies, Department of Physical Therapy, Virginia Commonwealth University, P.O. Box 980224, Richmond, VA 23298-0224.

## DOCTOR OF PHILOSOPHY DEGREE PROGRAM

The Department of Anatomy of the School of Medicine together with the Department of Physical Therapy of the School of Allied Health Professions offers a Ph.D. program in anatomy-physical therapy. The goal of the doctoral program is to train students in research and educational skills in preparation for the student to function as a physical therapy faculty member. Application is made to the Department of Anatomy. Acceptance into the program requires approval by the admissions committees of both departments.

Students in the Anatomy/Physical Therapy doctoral program take required courses (approximately 26-30 course credit hours) within the Department of Anatomy and at least eight course credit hours in the Department of Physical Therapy. Additional course work may be required by the student's dissertation committee.

The student plans and conducts a research study under the direction of a faculty member of the Department of Physical Therapy. In addition the student is required to assist in teaching three courses (split between the two departments).

For additional information regarding the doctoral program write the Coordinator, Advanced Graduate Studies, Department of Physical Therapy, Virginia Commonwealth University, P.O. Box 980224, Richmond, VA 23298-0224.

## FACULTY

Professors—

Lamb, R. L. (Chair)

Payton

Associate Professor—

Riddle

Assistant Professors—

Edwards

Finucane

Ford-Smith

Humphrey

Kues

Lewis

Mayhew

Shall

Shoaf

Sullivan

## COURSES IN PHYSICAL THERAPY (PHT)

**501 Gross Anatomy (Physical Therapy).** 3 lecture and 6 laboratory hours. 9 credits. Examines the structural and functional anatomy of the human musculoskeletal system through lecture and cadaver dissection. A thorough understanding of fundamental facts and principles that apply to professional practice is developed through lecture, dissection, radiographic examination, and clinical correlation.

**502 Kinesiology.** 3 lecture and 1 laboratory hours. 4 credits. Introduces the student to the kinematics and kinetics of human movement. Emphasis is placed on osteokinematics, arthrokinematics and the structures that limit and/or guide movement.

**505 Applied Microscopic Anatomy for Physical Therapy.** Semester course; 4 lecture hours. 4 credits. Examines the basic components of cells in terms of their structure and function. Cells and tissues of greatest importance to physical therapists are studied in detail, and their response to injury is explored. Reviews methods of studying cells.

**506 Functional Neuroanatomy.** Semester course; 5 lecture hours. 5 credits. Examines the basic structure and function of the nervous system with special emphasis on topics of greatest concern to physical therapists. Uses neurobiological approach to integrate the basic sciences of neuroanatomy, neurophysiology, and clinical neuroscience.

**507 Clinical Biomechanics.** Semester course; 3 lecture hours. 3 credits. Provides an opportunity to develop knowledge in sufficient depth to understand how selected biomechanical factors influence normal and pathologic human form and movement. Stresses validity and reliability of *methods of evaluating musculoskeletal form and function*.

**508 Measurement and Assessment.** Semester course; 4 lecture and 4 laboratory hours. 6 credits. Teaches some of the basic evaluation methods and measurement procedures used

by physical therapists in history taking and physical examination. Includes lecture, demonstration, and practice in measurement of the length and girth of body parts, manual and mechanical muscle testing, joint range of motion, accessory motion testing, and palpation. Taught in sequence with PHT 501 Functional Anatomy.

**510 Rehabilitation I.** Semester course; 2 lecture and 2 laboratory hours. 2 credits. Introduces basic clinical skills and procedures including measurement of vital signs, patient lifting and moving techniques, progressive mobilization, medical asepsis, and principles of bandaging. Introduces record keeping and professional communication.

**512 Clinical Problem Solving I.** Semester course; 1 lecture and 2 laboratory hours. 2 credits. Presents and provides practice with models of clinical reasoning, communications, and ethical decision making; discusses psychosocial aspects of patient care.

**520 Clinical Education I.** Semester course; 240 clock hours. 3 credits. Provides full-time clinical experience in health care facilities in Virginia and neighboring states. Introduces students to the professional practice of physical therapy. Includes supervised clinical work with patients, the role of physical therapy in health care systems, and documentation procedures.

**531 Scientific Inquiry.** Semester course; 2 lecture hours. 2 credits. Provides guidelines for critical analysis of professional literature, for the utilization of research by the physical therapy professional, and for the development of a clinical research project.

**533 Physical Agents.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Examines the theory and therapeutic application of massage, hydrotherapy, thermotherapy, ultraviolet, compression, and traction. Emphasizes clinical application and problem solving.

**537 Rehabilitation II.** Semester course; 1 lecture and 2 laboratory hours. 2 credits. Presents principles of evaluation, goal setting, and program planning for spinal cord injured patients and cancer patients. Provides practice of rehabilitation techniques for severely and chronically disabled patients.

**539 Foundations for Neurophysiologic Physical Therapy.** Semester course; 3 lecture hours. 3 credits. Covers models of motor control related to the understanding of neurologic dysfunction and neurophysiologic principles for physical therapy.

**540 Neurologic Physical Therapy.** Semester course; 4 lecture and 4 laboratory hours. 6 credits. Applies principles of life-span motor development, learning, and control to the evaluation and remediation of neuromotor disorders of infants and children. Critically surveys current theory and practice in neuromotor therapeutics for children and adults.

**544 Orthotics and Prosthetics.** Semester course; 2 lecture hours. 2 credits. Prepares the student to participate as a member of the professional prosthetic or orthotic clinic team; integrates material from other courses; and teaches basic skills in orthotic and prosthetic assessment, prescription, and training and performing initial and final prosthetic and orthotic checkouts.

**546 Clinical Medicine.** Semester course; 2 lecture hours. 2 credits. Comprehensive course in clinical medicine and sciences relevant to the practice of physical therapy. Medical practitioners from the MCV Campus and surrounding areas participate. Topics include psychiatry, hematology, oncology, dermatology, dentistry, rheumatology, neurology, and burn therapy.

**548 Orthopedic Physical Therapy.** Semester course; 3 lecture and 2 laboratory hours. 4 credits. Presents principles of evaluation and treatment of patients with musculoskeletal disorders.

**550 Clinical Education II.** Semester course; 400 clock hours. 5 credits. Provides full-time clinical experience in health care facilities throughout the country. Applies previous clinical and academic learning and provides increased responsibility for patient care in a supervised setting. Requires case study.

**601 Advanced Measurement Concepts.** Semester course; 3 lecture hours. 3 credits. Investigates the principles of measurement theory as applied to clinical practice. Reviews basic principles guiding electronic instrumentation and electromyography. Examines the theoretical bases for the examination and treatment approaches used in Orthopaedic Physical Therapy or Neurologic Physical Therapy.

**602 Biomechanics.** Semester course; 3 lecture hours. 3 credits. This course covers selected material related to the effects of forces upon normal and pathologic human form and movement. Students have the opportunity to develop an understanding of the basic principles of biomechanics and methods of measurement used in biomechanics so that they can better understand the clinical, academic, and research activities of their specific fields of interest.

**605 Foundations for Pathokinesiology.** Semester course; 34 lecture hours. 3-4 credits. A study of the principles that form a foundation for understanding pathokinesiology and therapeutic kinesiology. Integration of principles of motor development, control, and learning with emphasis on abnormal motor behavior and its remediation.

**606 Therapeutic Kinesiology.** Semester course; 1-3 lecture and 3 clinical hours. 2-4 credits. A study of motor behavior in both normal and pathological conditions. Reading and discussion of the basic literature of current neurologic approaches to therapeutic exercise and an integration of these concepts into a comprehensive model of human movement.

**607 Principles of Clinical Examination in Orthopedic Physical Therapy.** 2 laboratory hours. 1 credit. May be repeated for a maximum of two credits. Principles and technique for evaluation of joint and soft tissue injuries and disabilities with an emphasis of history taking and accessory motion testing.

**608 Advanced Musculoskeletal Sciences.** Semester course; 3 lecture hours. 3 credits. Investigates advanced principles related to musculoskeletal anatomy and histology as they relate to physical therapy clinical practice. Examines the scientific basis for the assessment of muscle performance in patients. Examines recent literature related to the use of thermal and electrical modalities used on patients with problems of the musculoskeletal system.

**611 Research Process.** Semester course; 2 lecture hours. 2 credits. Readings, discussions, and reports on the current

status of professional literature and the validation of clinical practice, clinical administration, and professional education. A model for professional development, the role of research in the validation process, and the basis of research design are presented non-mathematically. Required of all advanced Master of Science degree students unless excused by the faculty.

**621 Electrophysiological Measurements and Therapeutics.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Reviews basic physical principles related to electricity and electronics. Studies physical and physiological effects of electrical currents, their therapeutic indications, and contraindications. Laboratory practice emphasizes the use of electrical currents for physical therapy evaluation and treatment.

**623 Cardiopulmonary Physical Therapy.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Applies principles of pathophysiology of the cardiovascular and respiratory systems; includes physical therapy assessment and treatment of patients with cardiac and respiratory disorders.

**625 Clinical Problem Solving II.** Semester course; 18 clock hours, 1 credit. Students review, integrate, and develop strategies for using previously presented material and present case studies in oral and written forms. Provides a summative learning experience.

**627 Geriatric Physical Therapy.** Semester course; 2 lecture hours. 2 credits. Discusses the physiological, cognitive, physical, and functional changes due to aging, necessary modifications of physical therapy procedures for geriatric patients, general principles of geriatric rehabilitation, and unique problems associated with physical therapy practice in nursing homes and extended care facilities.

**629 Special Topics in Physical Therapy.** Semester course; 1 lecture hour. 1 credit. Provides an opportunity to pursue and present a topic of interest that is related to physical therapy evaluation and treatment.

**631 Professional Issues in Physical Therapy.** Semester course; 3 lecture hours. 3 credits. Discusses professional issues facing the modern physical therapy practitioner, including ethical principles, practice options, supervision, socioeconomic aspects of physical therapy service, departmental planning, third-party reimbursement, specialization, medical legal aspects of practice, and physical therapy education.

**632 Clinical Education III.** Semester course; 640 clock hours. 8 credits. Provides full-time work in a minimum of two clinical facilities located throughout the country. Students apply previous course work and demonstrate entry-level competencies by assuming increasing responsibilities for patient care. Students may request assignment to practice settings which meet personal interest and future professional goals.

**690 Physical Therapy Seminar.** Semester course; 1 lecture hour. 1 credit. Reports on current problems and issues in the field of physical therapy. May be repeated for a maximum of four credits; required of advanced Master of Science degree students for two semesters.

**691 Special Topic in Physical Therapy.** 1-4 credits. Guided independent study of specific topics not discussed in courses

or discussed in less detail in courses. Student's desired topic of study must be identified and approved prior to enrollment.

**692 Clinical Specialty Seminar.** Semester course; 0.5-3 credits. Individual reports dealing in depth with the history, current status, and problems in a given area of clinical specialization.

**693 Clinical Specialty Practicum.** 60 clock hours per credit. 1-9 credits. Concentrated clinical experience under the guidance of an approved preceptor.

**798 Research in Physical Therapy.** 1-15 credits. Research in preparation for the advanced Master of Science degree thesis or doctoral dissertation.

## Department of Radiation Sciences

### HISTORY

Radiologic technology education began at the Medical College of Virginia in the 1930s with a one-year training program. In 1961 this certificate program became more formalized and was lengthened to two years. The certificate program was discontinued when the last class graduated in 1973.

In 1966 a curriculum leading to an Associate in Science degree was implemented to complement the existing certificate program. Originally a three-year program, it was revised in 1978 to reduce the length to 24 months. This was accomplished by combining liberal arts and professional course work into the two-year period and permits entry of high school graduates directly into the program.

An undergraduate baccalaureate program for radiologic technologists was begun in 1979. The program leading to the Bachelor of Science degree offers concentrations in radiologic technology education, radiology administration, nuclear medicine technology, or radiation therapy.

### PHILOSOPHY

The faculty of the program of radiologic technology is concerned with maintaining the professional image of the radiologic technologist through high-quality education and concern for the needs of the patient. The department believes that in order to maintain the professional image, they must provide an environment which promotes stimulating intellectual discovery, both academically and clinically. Further, the department believes it is necessary to foster in students an attitude that learning is a lifelong process.

It is essential that students realize that they are responsible for patients and they should attempt to understand both the physical and emotional

problems of patients and be inquisitive about and concerned with patients' prescribed treatment.

The faculty continues to grow professionally while maintaining a humanistic attitude which permits individual freedom of expression for both students and faculty, an openness toward change, and mutual respect for all.

### OBJECTIVES

1. To provide the student with the opportunity to obtain the knowledge and skills necessary to function as a competent registered radiologic technologist.
2. To provide an educational atmosphere that will engender in the student intellectual curiosity and a desire for lifelong learning and excellence in clinical performance.
3. To strive to maintain an educational environment that keeps abreast of change and new methodology within the fields of radiology and radiologic technology.
4. To provide an atmosphere in which the student develops appreciation for his role as a professional and the associated responsibility for contributing to the advancement of the profession through research, continued education, and active participation in the professional societies.

### FACILITIES

The educational facilities for the Department of Radiation Sciences are located in the west wing of the sixth floor of the West Hospital Building, 1200 East Broad Street. These facilities include two well-equipped, energized radiographic laboratories with automatic film processing capabilities.

During the various phases of the curriculum, students will be assigned to each of the following affiliate institutions: Medical College of Virginia Hospitals, McGuire Veterans Affairs Medical Center, and Chippenham Medical Center.

### ASSOCIATE IN SCIENCE PROGRAM

#### ACCREDITATION

The program of radiologic technology (Associate in Science degree) is accredited by the Committee on Allied Health Education and Accreditation. Upon completion of the program, the student is eligible for the national certification examination given by the American Registry of Radiologic Technologists.

#### ADMISSION REQUIREMENTS

Candidates for admission to the program must have completed high school or have passed a

GED examination. Transcripts of high school work and Scholastic Aptitude Test (SAT) scores must be submitted with the application. Candidates are encouraged to obtain some hospital experience, either as a volunteer or as an employee. Such experience should preferably be in a department of radiology but may be elsewhere in the hospital.

Applications should be submitted after September 1 and before March 1. Applications submitted after March 1 can be accepted only on a space-available basis. Correspondence should be sent to University Enrollment Services/Admissions, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632.

### ACADEMIC REGULATIONS

To continue in the radiologic technology associate degree curriculum, the student is expected to

1. Maintain a minimum semester grade-point and cumulative grade-point average of 2.0;
2. Obtain a passing grade in all required courses and a "C" or better in all radiologic technology courses indicated with an asterisk in the curriculum outline; and
3. Demonstrate the attitude and skills necessary to function as a radiologic technologist as assessed by academic and clinical faculty.

### HONORS AND AWARDS

**A. D. Williams Award.** This award is given to the student in each class who has achieved the highest cumulative grade-point average.

**A. D. Williams Scholarship.** This scholarship may be given to a rising sophomore who demonstrates high scholastic attainment, professional clinical performance, and unusual promise as a radiographer.

**E. R. Squibb Award.** This annual award may be given to a sophomore student and is based on the demonstration of professionalism, competency, and academic achievement. The selection for the award is made by the faculty and students.

**Clinical Radiographer Award.** This award may be given annually to a sophomore student for outstanding clinical performance and the demonstration of a high standard of professionalism. The selection for this award is based on the votes of clinical radiographers in affiliate hospitals.

**Tina Plaster Memorial Award.** This award honors a member of the Class of 1992 who was tragically killed during the term of her program and recognizes a freshman who displays the following characteristics associated with Ms. Plaster: excellent academic standing, good atten-

dance, excellent patient care, and high standards of professionalism.

## CURRICULUM<sup>2</sup>

	Semester Hours	
	fall	spring
<b>First Year</b>		
ENG 101 Composition and Rhetoric .....	3	
ENG 102 Composition and Rhetoric .....		3
BIO 109 General Biology .....	4	
BIO 205 Basic Human Anatomy .....		4
*RTE 101 Radiographic Procedures I.....	4	
*RTE 103 Principles of Radiographic Exposure I .....	2	
*RTE 104 Principles of Radiographic Exposure II .....		3
*RTE L104 Radiographic Exposure Lab ...	1	
*RTE 105 Patient Care and Ethics .....	3	
*RTE 194 Clinical Education I .....		3
MAT 101 College Algebra .....		3
	16	17
<b>Summer Session</b>		
BIO 206 Human Physiology .....	4	
*RTE 102 Radiographic Procedures II .....	1	
*RTE 196 Clinical Education II .....	5	
RTE 291 Directed Study: Radiography .....	2	
	2	
<b>Second Year</b>		
PHY 101 Foundations of Physics .....	3	
PHY 102 Frontiers of Physics .....		3
*RTE 201 Radiographic Procedures III .....	3	
RTE 203 Medical and Surgical Diseases I .....	2	
RTE 204 Medical and Surgical Diseases II .....		2
RTE 213 Advanced Radiographic Imaging .....		3
*RTE 293 Clinical Education III .....	5	
*RTE 294 Clinical Education IV .....		5
*RTE 208 Radiation Safety .....		2
PSY 101 General Psychology .....	3	
	16	15
<b>Summer Session</b>		
*RTE 207 Radiographic Physics .....	3	
*RTE 295 Clinical Education V .....	5	
	8	

\*See Academic Regulations described in this section.

## BACHELOR OF SCIENCE PROGRAM

The Department of Radiation Sciences offers a program leading to the Bachelor of Science degree, with an area of concentration in education, administration, nuclear medicine technology, or radiation therapy. The concentrations in education and administration are designed to provide advanced theoretical and practical education for the individual who wants to become an educator in radiologic technology or an administrator in a radiology department. The core curriculum con-

sists of professional courses offered within the department. Additional course requirements in the area of concentration are offered in other departments of the University.

In an effort to provide upward career mobility to radiographers through advanced education and specialization and to meet manpower needs for nuclear medicine technologists and radiation therapists, the department also offers nuclear medicine technology and radiation therapy as areas of concentration within the baccalaureate curriculum. The curricula include core courses within the department and academic and clinical work in the area of specialization.

## PHILOSOPHY

The faculty of the Department of Radiation Sciences is concerned with keeping pace with the rapidly growing and widely diversified field of radiologic technology. There have been increased demands for people qualified to fill responsible positions in this area of health care. A baccalaureate degree is now required for those desiring a teaching position in the field. The administration of a radiological facility has become so complex that even small institutions are in need of educated individuals who are prepared to assume this responsibility. The Department of Radiation Sciences recognizes and attempts to meet that need by providing both an educational and an administrative track leading to the Bachelor of Science degree in clinical radiation sciences. The nuclear medicine and radiation therapy concentrations are designed to prepare technologists for fields which are rapidly expanding and becoming increasingly sophisticated. Every effort is made to provide the student with a varied environment in keeping with the effective instruction that a large university offers.

## OBJECTIVES

1. To provide the student with an opportunity for career development and advancement as a radiologic technology educator, administrator, nuclear medicine technologist, or radiation therapist.
2. To help meet growing manpower needs for competent individuals to provide education and administration in the field of radiologic technology.
3. To help meet growing manpower needs for competent technologists in nuclear medicine and radiation therapy.
4. To provide an atmosphere in which the student can develop to the fullest capacity as a radiation sciences professional.

<sup>2</sup>Refer to *Virginia Commonwealth University Undergraduate Bulletin* for descriptions of courses in ENG, BIO, MAT, PHY, and PSY.



5. To promote learning as a lifelong endeavor and to encourage continued professional growth through research, continued education, and active participation in professional societies.

### ADMISSION REQUIREMENTS

Candidates for admission to the upper-division program must meet one of the following requirements:

- A. Be a registered or registry-eligible radiologic technologist (A.R.R.T.) AND possess an associate degree from an accredited college or university; or
- B. Be a registered or registry-eligible radiologic technologist (A.R.R.T.) AND have successfully completed ("C" grade or better) three semester hours of college algebra or equivalent and three semester hours of basic college English. or
- C. THIS OPTION IS AVAILABLE ONLY TO NUCLEAR MEDICINE TECHNOLOGY APPLICANTS:

Have completed two years of post-secondary education to include:

human anatomy and	
physiology .....	8 semester credits
general chemistry .....	8 semester credits
English composition .....	6 semester credits
college algebra .....	3 semester credits
general psychology .....	3 semester credits
general physics .....	8 semester credits
additional course work .....	to TOTAL no less
	than 60 semester credits

A high school transcript, transcripts of all college work and/or radiography training, and a copy of the registry examination report must be submitted with the application.

Students admitted without an associate degree (option "B" under admission requirements), must complete the following liberal arts requirements in addition to their major curriculum:

college algebra .....	3 semester credits
English .....	6 semester credits
general psychology .....	3 semester credits
anatomy/physiology .....	8 semester credits
general physics .....	6 semester credits

Students applying for the nuclear medicine curriculum under Option "A" or "B" above are strongly encouraged to have completed two semesters of general college chemistry prior to admission. If this is not taken prior to admission, the student will be required to complete it as part of the required curriculum.

Students who are admitted as registry-eligible must successfully complete the Registry exam by

the end of their second semester to remain enrolled in their program of studies.

Most students will be required to appear for a personal interview as part of the application process.

Applications should be submitted after September 1 and preferably before April 1 for maximum consideration. Correspondence should be sent to University Enrollment Services/Admissions, Medical College of Virginia, Virginia Commonwealth University, P.O. Box 980632, Richmond, VA 23298-0632.

### ACADEMIC REGULATIONS

Requirements for academic promotion:

1. Maintain a grade-point average of 2.0.
2. Have a passing grade in all courses and a "C" or better in all courses marked with an asterisk.
3. Exhibit the attitude and responsibility deemed necessary to function as a professional radiologic technologist in the selected area of concentration.

### CURRICULUM<sup>3</sup>

#### EDUCATION CONCENTRATION

Junior Year, fall semester	Semester Hours
EDU 300 Foundations of Education .....	3
HCM 300 Health Care Organization and Services ...	3
CRS 309 Advanced Radiographic Physics .....	4
*AHP 351 Learning Theory .....	3
Elective .....	3
	16

Junior Year, spring semester	
CRS 302 Pathophysiology for Radiographers .....	2
PSY 321 Social Psychology .....	3
PSY 340 Introduction to Helping Relations .....	3
*ADE 402 How Adults Learn .....	3
CSC 150 BASIC Computer Concepts .....	3
Elective .....	3
	17

Senior Year, fall semester	
*AHP 401 Instructional Strategies .....	3
EDU 407 Educational Media: Utilization .....	3
SPE 321 Speech for Business and the Professions ...	3
CRS 411 Theory and Practice of Radiographic Quality Assurance .....	3
STA 213 Introduction to Statistics .....	3
	15

Senior Year, spring semester	
*CRS 493 Educational Practicum .....	6
CRS 412 Radiation Health .....	3
*AHP 491 Issues in Allied Health Education .....	3

<sup>3</sup>For descriptions of courses in Education (EDU), Business (BUS), Economics (ECO), Psychology (PSY), Computer Science (CSC), and Speech (SPE), see the *Virginia Commonwealth University Undergraduate Bulletin*.

Elective .....	3
	<hr/> 15
TOTAL .....	63

**CURRICULUM<sup>3</sup>****ADMINISTRATION CONCENTRATION**

<b>Junior Year, fall semester</b>	<i>Semester Hours</i>
HCM 300 Health Care Organization and Services ...	3
CRS 309 Advanced Radiographic Physics .....	4
BUS 203 Introduction to Accounting I .....	3
BUS 319 Organizational Behavior .....	3
STA 213 Introduction to Statistics .....	3
	<hr/> 16

<b>Junior Year, spring semester</b>	
BUS 204 Introduction to Accounting II .....	3
CRS 302 Pathophysiology for Radiographers .....	2
BUS 320 Production/Operations Management .....	3
BUS 323 Legal Environment of Business .....	3
BUS 331 Personnel Management .....	3
†Computer course .....	3
Elective .....	3
	<hr/> 17

<b>Senior Year, fall semester</b>	
*CRS 405 Applied Radiology Management .....	3
CRS 411 Theory and Practice of Radiographic Quality Assurance .....	3
BUS 306 Cost Accounting .....	3
BUS 489 Managerial Applic/Skill Development .....	3
†Computer course .....	3
	<hr/> 15

<b>Senior Year, spring semester</b>	
*CRS 494 Management Practicum .....	4
CRS 412 Radiation Health .....	3
BUS 350 Tort Law .....	3
ECO 203 Introduction to Economics .....	3
Elective .....	3
	<hr/> 16

TOTAL ..... 64  
 †6 semester hours of computer courses required; may choose from CSC 150, BUS 360, and BUS 361 subject to approval of faculty advisor.

**CURRICULUM**  
**NUCLEAR MEDICINE**  
**CONCENTRATION**

<b>Junior Year, fall semester</b>	<i>Semester Hours</i>
HCM 300 Health Care Organization and Services ...	3
PHI 213 Ethics and Healthcare OR	
PSY 412 Health Psychology .....	3
*CRS 303 Orientation to Nuclear Medicine .....	2
CRS 309 Advanced Radiographic Physics .....	4
Restricted Elective .....	3
	<hr/> 15

<b>Junior Year, spring semester</b>	
CSC 150 BASIC Computer Concepts .....	3
*CRS 419 Physics for Nuclear Medicine .....	3
*CRS 312 Nuclear Medicine Instrumentation and Computer Techniques .....	4
*CRS 394 Clinical Education I .....	2
Elective .....	3
	<hr/> 15

**Junior Year, summer semester**

*CRS 313 Clinical Nuclear Medicine Non-imaging Techniques I .....	3
*CRS 318 Clinical Nuclear Medicine Imaging Techniques .....	3
*CRS 396 Clinical Education II .....	5
	<hr/> 11

**Senior Year, fall semester**

*CRS 413 Theory and Practice of Quality Assurance for Nuclear Medicine .....	3
*CRS 417 Radiopharmaceutical Preparation and Quality Control .....	3
CRS 497 Senior Nuclear Medicine Project .....	3
*CRS 495 Clinical Education III .....	7
	<hr/> 16

**Senior Year, spring semester**

CRS 304 Pathophysiology for Nuclear Medicine .....	2
CRS 412 Radiation Health .....	3
*CRS 491 Senior Seminar: Nuclear Medicine .....	1
*CRS 496 Clinical Education IV .....	8
	<hr/> 14
TOTAL .....	71

\*See Academic Regulations described in this section.

**CURRICULUM**  
**RADIATION THERAPY**  
**CONCENTRATION**

<b>Junior Year, fall semester</b>	<i>Semester Hours</i>
*CRS 305 Orientation to Radiation Therapy .....	3
CRS 309 Advanced Radiographic Physics .....	4
*CRS 323 Radiation Therapy: Techniques/ Applications .....	4
CSC 150 BASIC Computer Concepts .....	3
HCM 300 Health Care Organization and Services ...	3
	<hr/> 17

**Junior Year, spring semester**

*CRS 311 Oncologic Patient Care .....	2
CRS 319 Physics for Radiation Therapy .....	3
*CRS 321 Pathology and Treatment Principles I .....	4
*CRS 392 Clinical Education I .....	3
HED 487 Coping and Adaption .....	3
	<hr/> 15

**Junior Year, summer semester**

*CRS 322 Pathology and Treatment Principles II ....	3
*CRS 415 Theory and Practice of Quality Assurance for Radiation Therapy .....	2
*CRS 398 Clinical Education II .....	5
	<hr/> 10

**Senior Year, fall semester**

*CRS 423 Radiobiology .....	2
CRS 485 Senior Radiation Therapy Project .....	3
*CRS 489 Clinical Education III .....	8
Restricted Elective .....	3
	<hr/> 16

**Senior Year, spring semester**

CRS 412 Radiation Health .....	3
*CRS 487 Senior Seminar: Radiation Therapy .....	1
*CRS 498 Clinical Education IV .....	8
Elective .....	3
	<hr/> 15
TOTAL .....	73

## FACULTY

Professor—  
 Fratkin  
 Associate Professors—  
 Greathouse (Chair)  
 Tatum (Medical Advisor—Nuclear Medicine)  
 Assistant Professors—  
 Fauber Meixner  
 Wasseen  
 Assistant Clinical Professor—  
 Wilkins  
 Instructor—  
 Swafford  
 Affiliate Instructors—  
 Legg Taormina  
 Clinical Instructor—  
 Gillon

## COURSES OF INSTRUCTION (RTE)

**101 Radiographic Procedures I.** Semester course; 3 lecture and 3 laboratory hours. 4 credits. An introductory course which combines the study of anatomy and physiology and positioning for routine diagnostic radiographic examinations. During labs, students demonstrate competence in radiographic procedures, including positioning of simulated patients, manipulation of radiographic equipment, and evaluation of radiographs.

**102 Radiographic Procedures II.** Semester course; 1/2 lecture and 1 laboratory hour. 1 credit. Prerequisite: RTE 101. Continuation of RTE 101 with emphasis on the anatomy and positioning of the skull and facial bones. Laboratory experience will include positioning of simulated patients, positioning and exposure of radiographic phantoms, and evaluation of radiographs.

**103 Principles of Radiographic Exposure I.** Semester course; 2 lecture hours. 2 credits. An introductory lecture course covering the basic principles necessary for image production. It is designed to prepare students for more technical aspects of radiography. At the completion of the course, the students should be able to identify the exposure factors and automatic processing techniques utilized in radiographic image formation.

**104 Principles of Radiographic Exposure II.** Semester course; 3 lecture hours. 3 credits. Prerequisite: RTE 103. A lecture course which provides theoretical analysis and integration of the factors which affect image production and radiographic quality. Also includes an overview of quality assurance and an introduction to quality control tests.

**L104 Radiographic Exposure II Laboratory.** Semester course; 2 hours. 1 credit. Laboratory exercises correlated with RTE 104. Can be taken concurrently with or subsequent to RTE 104.

**105 Patient Care and Ethics.** Semester course; 3 lecture hours. 3 credits. This course is designed to acquaint students with various aspects of patient care, specifically as it relates to radiographic and other procedures which they will encounter during their professional careers. It is also designed to prepare students to act quickly and effectively in the case of a medical emergency. Additionally, students will gain an understanding of their status as health care professionals.

**194 Clinical Education I.** Semester course; 240 clinical hours. 3 credits. Prerequisites: RTE 101 and 105. Clinical experience supervised by faculty and staff radiologic technologists. Students gain practical experience in radiographic techniques and positioning for various procedures in routine, emergency, portable, and operating room radiography.

**196 Clinical Education II.** Semester course; 360 clinical hours. 5 credits. Prerequisite: RTE 194. Supervised clinical experience in general diagnostic radiography by faculty and staff radiologic technologists. Students gain practical experience in radiographic technique and positioning for various procedures in routine, emergency, portable, and operating room radiography.

**201 Radiographic Procedures II.** Semester course; 3 lecture hours. 3 credits. Prerequisite: RTE 101 and 102. Continuation of RTE 101 and 102 to cover additional positions added to routine examinations. In addition, a variety of routine special studies and special procedures that visualize the circulatory, lymphatic, reproductive, urinary, and central nervous systems will be discussed.

**203-204 Medical and Surgical Diseases I and II.** Continuous course; 2 lecture hours. 2-2 credits. This course is designed to give the student an understanding of the principles of disease and introduction to various conditions of illness involving body systems.

**207 Radiographic Physics.** Semester course; 3 lecture hours. 3 credits. Prerequisites: PHY 101 and 102. Designed to provide a clear understanding of all sources and uses of medical radiation. Includes the study of radioisotopes, the production of X-rays, the interaction of radioactive material, the units of radioactive exposure and absorbed dose, and the measurement of radiation.

**208 Radiation Safety.** Semester course; 2 lecture hours. 2 credits. Designed to give a basic understanding of the way in which radiation interacts with the biological system. The student will have a knowledge of the basic radiation protection philosophy and how this philosophy relates to him or her as a professional.

**213 Advanced Radiographic Imaging.** Semester course; 3 lecture hours. 3 credits. This course focuses on specialized and new imaging modalities and includes discussion of a variety of image enhancement techniques and the operation of specialized equipment. Students will be introduced to computer usage and its impact on image manipulation. The course will also incorporate a presentation of state of the art technology and current developments.

**291 Directed Study: Radiography.** Semester course; 2 credits. Prerequisite: permission of department chairman. This course provides an opportunity for individualized research projects, tutorial studies, clinical work, or special studies not available in formal course work.

**293, 294, and 295 Clinical Education III, IV, and V.** Continuous course; 1,120 clinical hours. 5-5 credits. Prerequisite: RTE 196. Clinical experience supervised by faculty and staff technologists. Students gain expertise in all aspects of diagnostic radiography. Course may include elective rotations in sonography, nuclear medicine, radiation therapy, and other specialized radiographic areas.

## COURSES OF INSTRUCTION IN CLINICAL RADIATION SCIENCES (CRS)

**302 Pathophysiology for Radiographers.** Semester course; 2 lecture hour. 2 credits. Prerequisite: RTE 203-204, or equivalent. This course emphasizes pathology as demonstrated on the radiographic film in order to determine optimal positioning and radiographic techniques. The physiology and pathology which are recorded by the radiographic image and factors which influence the radiologist's diagnosis, therapy, and prognostic impression are also included. This course is taught only in alternate years.

**303 Orientation to Nuclear Medicine.** Semester course; 1 lecture and 2 clinical hours. 2 credits. This course is designed to acquaint the student with the field of nuclear medicine generally and the Program in Nuclear Medicine Technology specifically. It will also provide an introduction to clinical practice.

**304 Pathophysiology for Nuclear Medicine.** Semester course; 2 lecture hours. 2 credits. Prerequisite: CRS 313 and CRS 318. This course will examine how various pathophysiologic states of organs or organ systems affect the results of nuclear medicine procedures. Both qualitative and quantitative analysis of imaging procedures are included.

**305 Orientation to Radiation Therapy.** Semester course; 1 lecture and 2 laboratory hours. 2 credits. This course provides an overview of radiation therapy and its role in medicine. Medical ethics and legal practice and their importance to relationships with medical personnel, patients, and families will also be presented.

**309 Advanced Radiographic Physics.** Semester course; 4 lecture hours. 4 credits. Prerequisite: RTE 207 or departmental approval. This course is designed to advance the student's knowledge and understanding in the physical principles of diagnostic radiology. New applications and recent advances in radiation physics will be discussed. The physical principles of specialized imaging modalities, including computerized tomography, sonography, nuclear medicine, and magnetic resonance imaging, will be briefly presented.

**311 Oncologic Patient Care.** Semester course; 2 lecture hours. 2 credits. This course covers the basic concepts of patient care specific to radiation therapy, including consideration of physical and psychological conditions. Handling of patients, patient examinations, asepsis, local and systemic reactions, nutrition and medications are presented. Factors influencing patient health during and following a course of radiation will be identified.

**312 Nuclear Medicine Instrumentation and Computer Techniques.** Semester course; 3 lecture and 2 laboratory hours. 4 credits. Corequisite: CSC 150. This course is designed to introduce students to the electronic principles of nuclear medicine instrumentation and the principles of operation for equipment which measures and records the interaction of radiation with matter.

**313 Clinical Nuclear Medicine: Non-imaging Techniques I.** Semester course; 3 lecture hours. 3 credits. Prerequisite: CRS 312. This course is designed to integrate basic anatomy and physiology with non-imaging in vitro procedures. The

students will become knowledgeable about current radiopharmaceuticals of choice, biorouting of administered radiopharmaceuticals, normal and abnormal test values, and patient or specimen counting techniques.

**318 Clinical Nuclear Medicine: Imaging Techniques.** Semester course; 3 lecture hours. 3 credits. Prerequisite: CRS 312. This course is designed to integrate basic anatomy, physiology, and instrumental knowledge with imaging procedures. The students will become knowledgeable about current radiopharmaceuticals of choice, biorouting of the administered radiopharmaceutical, accepted patient dosage levels, normal and abnormal test findings, and contraindications for radiopharmaceutical administration.

**319 Physics for Radiation Therapy.** Semester course; 3 lecture hours. 3 credits. This course includes a discussion of the properties of electromagnetic and particulate radiation. Details of production, interactions, treatment units, measurement of radiation, radioactivity, and brachytherapy are presented.

**321 Pathology and Treatment Principles I.** Semester course; 4 lecture hours. 4 credits. Prerequisite: CRS 305. This course presents the fundamentals of the disease process for cancer of the following: skin, thorax, genitourinary, gynecological, head and neck, central nervous system, and breast. The malignant condition, etiology and epidemiology, patient workup, and methods of treatment are discussed. Attention is given to patient prognosis, treatment results, and the effects of combined therapies.

**322 Pathology and Treatment Principles II.** Semester course; 3 lecture hours. 3 credits. Prerequisite: CRS 305. This course is a continuation of CRS 321 and presents the fundamentals of the disease process for the following cancers: gastrointestinal, lymphomas and hemotologic malignancies, bone tumors, childhood tumors, eye and orbital tumors. The malignant condition, etiology and epidemiology, patient workup, and methods of treatment are discussed. Attention is given to patient prognosis, treatment results, and the effects of combined therapies. Radiotherapeutic emergencies, palliation, and combined modality treatment will also be discussed.

**323 Radiation Therapy: Techniques and Applications.** Semester course; 4 lecture hours. 4 credits. Prerequisite: CRS 319. Presents the basic concepts of dosimetry and treatment planning. Various external beam techniques and applications, depth dose data, and summation of isodose curves are discussed. Modalities of treatment, patient setup, dose measurement and verification are also included.

**392 Clinical Education I.** Semester course. 3 credits. Prerequisite: CRS 305. Emphasis during the first semester of clinical education is on becoming familiar with the various aspects of a radiation therapy department. The student will be expected to observe and assist in simulation; observe, assist, and participate in treatment areas, and achieve competence in the nursing rotation. Attention is given to the development of professional responsibility and the importance of concerned patient care.

**394-396 Clinical Education I and II.** Continuous course; 456 clinical hours. 2-5 credits. Prerequisite: CRS 303 and corequisites CRS 313 and 318 (for 396). Clinical experience supervised by faculty and staff technologists. Focus of first semester is on observation of clinical nuclear medicine prac-

tice; focus for second semester is on attainment of competence in common imaging procedures with introductory work in non-imaging studies.

**398 Clinical Education II.** Semester course. 3 credits. Prerequisite: CRS 392. During the second semester, the student observes and assists in dosimetry; observes and assists in simulation; and develops competency in routine treatment setups.

**405 Applied Radiology Management.** Semester course; 3 lecture hours. 3 credits. Prerequisite: departmental approval. This course will aid the student in relating basic concepts in management to the radiological environment and relationship of the radiological facility to the health care system.

**411 Theory and Practice of Radiographic Quality Assurance.** Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: CRS 309. Lecture and laboratory courses designed to evaluate quality assurance measures in radiology. The course is a theoretical and investigative approach to achieving and maintaining quality control tests of radiographic systems and will provide insight into developing quality control in patient care and education in a radiology department.

**412 Radiation Health.** Semester course; 3 lecture hours. 3 credits. Prerequisite: CRS 309. An in-depth course designed to integrate the physical aspects of radiation physics with radiobiology to develop an understanding of radiation protection.

**413 Theory and Practice of Quality Assurance for Nuclear Medicine.** Semester course; 2 lecture, 2 lab hours. 3 credits. Prerequisite: CRS 312. Lecture and laboratory course designed to explore the quality assurance parameters in a nuclear medicine department. Emphasis will be on the performance of tests to assess survey meters, spectrometers, dose calibrators, gamma cameras, and SPECT imaging systems. Additionally, quality assurance will be discussed in terms of radiopharmaceuticals, radioimmunoassay labs, and patient management.

**415 Theory and Practice of Quality Assurance for Radiation Therapy.** Semester course; 2 lecture hours. 2 credits. Prerequisite: CRS 323. This course is designed to provide the student with knowledge of the principles and concepts of quality assurance. The performance of various tests, including purpose, sources of malfunction, and action guidelines will be discussed.

**417 Radiopharmaceutical Preparation and Quality Control.** Semester course; 2 lecture hours, 2 laboratory hours. 3 credits. Prerequisites: CRS 303 and 2 semesters of college chemistry. This course is designed to provide the individual with the technical knowledge necessary for the preparation and quality control of radiopharmaceutical agents for in vivo and in vitro nuclear medicine studies.

**419 Physics for Nuclear Medicine.** Semester course; 3 lecture hours. 3 credits. Prerequisite: CRS 309. This course is designed to build upon concepts introduced in CRS 309 presenting topics of interest to nuclear medicine technologists in greater depth. Will cover special theory of relativity; induced nuclear reactions; nuclide chart; radioactive decay; *physical characteristics* of alpha and beta particles, gamma rays, and gamma scintillation spectroscopy.

**423 Radiobiology.** Semester course; 2 lecture hours. 2 credits. Prerequisites: CRS 319, CRS 321, and CRS 322. This course presents the principles of biologic responses to radiation. Factors influencing radiation effects, tissue sensitivity, tolerance, and clinical applications are considered.

**485 Senior Radiation Therapy Project.** Independent study. 3 credits. Prerequisite: senior status. This course is designed to provide the student with an opportunity to explore a particular area of interest in radiation therapy in more depth than is possible in the regular curriculum. The student will work independently with faculty advisement, to develop knowledge and/or skill in a specialized area of radiation therapy.

**487 Senior Seminar: Radiation Therapy.** Semester course; 1 lecture hour. 1 credit. Prerequisite: senior status. This course is designed to provide an opportunity for the student to integrate the various individual courses into a single perspective on clinical radiation therapy. New developments in the field and other timely professional issues will be discussed. Attention will be given to the responsibilities of health care professionals in general and radiation therapists in particular.

**489 Clinical Education III.** Semester course. 8 credits. Prerequisite: CRS 398. During the third semester, the student is expected to develop competency in routine treatment planning or advance treatment setups and in routine simulation procedures.

**491 Senior Seminar: Nuclear Medicine.** Semester course; 1 lecture hour. 1 credit. Prerequisite: senior status. This course is designed to allow the student to integrate the various individual courses into a single perspective on clinical nuclear medicine. The course will present information regarding the specific administrative requirements for the efficient operation of a nuclear medicine department. Additionally, the course will provide students with an appreciation for their responsibilities as health professionals with emphasis on the need for lifelong learning and participation in professional organizations.

**493 Educational Practicum in Radiologic Technology.** Semester course. 6 credits. Prerequisites: AHP 351 and 401. Supervised teaching practicum for students enrolled in the educational track. The practicum is designed to provide the student with a vehicle to integrate previously learned concepts and apply them in actual classroom and clinical education situations.

**494 Management Practicum.** Semester course. 4 credits. Prerequisite: CRS 405. This course is designed to allow the student to integrate managerial concepts and theory into the organizational environment of a diagnostic radiology department.

**495-496 Clinical Education III and IV.** Continuous course; 900 clinical hours. 7-8 credits. Prerequisite: CRS 396. The focus of the third semester of clinical education will be on proficiency in imaging procedures and competency in non-imaging procedures. The focus for the fourth and final semester of clinical education will be on the attainment of proficiency in the performance of all imaging and non-imaging procedures. Emphasis will be placed on maximum application of technical knowledge, standards of patient care, and radiation safety considerations. Students will also have an opportunity to observe and assist in auxiliary areas of nuclear medicine, e.g. radiation safety.

**497 Senior Nuclear Medicine Project.** Independent study. 3 credits. Prerequisite: senior status. This course is designed to provide the student with an opportunity to explore a particular area of interest in nuclear medicine in more depth than is possible in the regular curriculum. The student will work independently, with faculty advisement, to develop knowledge and/or skill in a specialized area of nuclear medicine.

**498 Clinical Education IV.** Semester course. 8 credits. Prerequisite: CRS 398. During the final semester, the student is expected to develop competency in routine treatment planning or advance treatment setups and demonstrate maximum proficiency in all routine treatment setups. The student will be expected to demonstrate a high level of professional responsibility and competent and concerned patient care. Opportunities will be presented for observation in mold room, brachytherapy, hyperthermia, and the hematology/oncology clinic.

## Department of Rehabilitation Counseling

The rehabilitation counseling program at VCU was established in 1955 to provide graduate education in rehabilitation counseling.

This program prepares prospective rehabilitation counselors for employment in state and federal vocational rehabilitation programs and public and private rehabilitation agencies. Graduates work in rehabilitation units in mental hospitals, correctional institutions, public schools, rehabilitation centers, sheltered work shops, adjustment centers, social service agencies, and other organizations serving persons who have mental, emotional, social, or physical disabilities. It also provides advanced training for persons presently employed in agencies and facilities offering services to individuals with disabilities.

Emphasis is placed upon professional education for developing the skills and knowledge necessary for effective rehabilitation counseling of persons with disabilities. The variety of activities performed by rehabilitation counselors necessitates a program highly diversified in character. In addition to the development of a broad understanding of human behavior, the techniques of individual and group counseling, interprofessional relations, vocational appraisal and adjustment, and use of community resources in facilitating the rehabilitation of individuals with mental, emotional, social, and physical disabilities are stressed.

## INSTITUTES AND WORKSHOPS

The Department of Rehabilitation Counseling conducts institutes and workshops as part of an ongoing in-service training program for employed personnel. The department will continue to con-

duct such institutes and workshops as long as there is a demonstrated need and funds are available.

## AWARDS

The Stalnaker-Wright Award for Outstanding Achievement is presented annually to a full-time graduate student in the Department of Rehabilitation Counseling. Initiated by the graduating class of 1963, this award is named in honor of the founder of the department, Dr. Wade O. Stalnaker and Professor Emeritus, Keith C. Wright.

The recipient is selected on the basis of meritorious academic scholarship, dedication to the philosophy and concepts of rehabilitation, and extracurricular accomplishments in community services.

## ALCOHOL AND DRUG EDUCATION/REHABILITATION PROGRAM

Established in 1975 as the Alcohol Education Program, the program changed its name to the Alcohol and Drug Education/Rehabilitation Program (ADERP) in the fall of 1979. This reflects the enlarged scope of the program (which has come to include all types of addictions (chemical, relationship, behavioral, etc.). The new title of the program also reflects the fact that students progressing through these courses often become aware of their own alcohol/drug problems or those within their families and seek help; thus, there is a rehabilitation nature to the educational sequence.

ADERP was established to meet the following objectives: (1) to define, increase, and evaluate the competencies and skills of professional alcoholism and drug counselors; (2) to increase the scope of knowledge about alcohol and drugs for clinical supervisors, program managers, medical personnel, mental health workers, and those in other fields serving as gatekeepers; (3) to develop and train new personnel for the alcohol and drug field; and (4) to conduct alcoholism and drug abuse rehabilitation research. Both workshop and academic courses are designed to meet the objectives.

Graduate studies leading to a master's degree are made available to full-time, part-time, or work-study students. A concentration package is available also in the undergraduate curriculum for students who choose the Alcohol and Drug Educational/Rehabilitation Program option. Graduate and undergraduate programs provide classroom-based courses as well as workshops for academic and/or continuing education credit.

Courses are open also to other rehabilitation students as well as those in pharmacy, nursing,

psychology, corrections, business, and others, as electives.

In accordance with the mandate from the Virginia General Assembly for certification of all alcohol and drug counselors in the state, ADERP developed an approved program of education to meet requirements as stated by the Virginia Alcoholism Counselor Certification Committee. The program currently meets those standards more recently established for Virginia Substance Abuse Counselor Certification. Education for certification involves the completion of 400 hours of approved substance abuse education which includes the following five areas of competency: knowledge of drug, alcohol, and substance abuse treatment; case management; counseling principles and techniques; information and referral; and recovery. This 400-hour educational program consists of 220 contact hours with the appropriate didactic/experiential ratio and 180 practicum hours which may be fulfilled either through the academic degree program or by successfully completing the progression of seminar and nondegree academic courses.

Instruction addresses a core body of knowledge which is inclusive of the following courses: Overview of Alcoholism and Drug Abuse; Recovery of Alcoholism and Drug Abuse; Treatment of the Alcoholic/Drug Addict with the Significant Others (Family); and Principles, Methods, and Techniques in Treatment of the Alcoholic and Drug Addict (Group Interaction). Also, a focus on direct application of this core body of knowledge (220 hours of didactic and experiential education) is experienced, in the field, by all students before completion of the course sequence as they accomplish 12 core functions in a clinical setting under supervision through the practicum/internship course.

In addition to the core body of knowledge, areas of special interest are addressed in Crisis Intervention with the Alcoholic and Drug Addict, Prevention Case Management, Occupational Alcoholism and Drug Abuse Program Development, and other courses, depending on the individual's educational level and area of interest.

ADERP's growth in training through education parallels its initiation and subsequent expansion into the greater Richmond community. Contributions of the program to the community include multidisciplinary informational contacts; referrals to various agencies, skilled instructors, and speakers available upon request; knowledgeable counselors who value accountability and professionalism (as seen in those seeking certi-

cation and licensure), exchanges of current trends in treatment and education as transmitted by students doing internship/practicum placements at local agencies. Also included are increased awareness as enhanced by multimedia coverage of workshops and other events, individual rehabilitation of some program participants that return to the community with a message of hope in recovery while supporting AA, Al-Anon or concerned persons programs, and finally, ADERP is a vital part of the community support network.

ADERP, a nationally recognized program, has established itself as a foundation of the educational community as well as the greater Richmond community and the overall state structure where alcohol and drug education/rehabilitation is a new frontier. Information on academic courses and all workshops is available in the ADERP brochures and/or supplements and the University bulletins.

For further information, write or call the Department of Rehabilitation Counseling, Alcohol and Drug Education/Rehabilitation Program, Virginia Commonwealth University, P.O. Box 842030, Richmond, VA 23284-2030, (804) 367-6233.

## ADVANCED CERTIFICATE IN PROFESSIONAL COUNSELING

In cooperation with the School of Education, the Department of Rehabilitation Counseling sponsors an advanced counseling track for persons who hold a master's degree and want to work toward a license in professional counseling. Many professional counselors offer their services to the public as private practitioners. Faculty in the Department of Rehabilitation Counseling and the School of Education have been instrumental in developing professional counseling in Virginia and supporting licensure activities for professional counselors.

### Optional Focus Areas

The Department of *Rehabilitation Counseling*, through its courses and those in other departments, offers focus areas to all graduate students within the department. Although focus areas are offered, the student may select general rehabilitation and not choose to have a special focus. These areas include (1) mental health rehabilitation; (2) correctional rehabilitation (public offender rehabilitation); (3) vocational evaluation and work adjustment; (4) services to persons with severe disabilities; (5) counseling, (individual and group—with courses offered in Adlerian



lifestyle counseling, rational emotive techniques, and gestalt counseling; and (6) alcohol and drug rehabilitation.

Courses provide considerable flexibility for students who wish to emphasize special concerns. Internships are provided in mental health, correctional settings, or other settings (such as vocational evaluation and work adjustment units in various rehabilitation facilities). Students may emphasize working with persons with physical disabilities and the development of community resources through special courses, such as rehabilitation case studies, occupational information, job analysis and placement, work evaluation techniques, work adjustment techniques, and internship. A course in rehabilitation research is offered also and usually is directed toward a student's area of special interest. Faculty members encourage students to select term papers and research project topics to emphasize areas in which they have the highest level of interest.

All students should note, however, that it is not necessary to specialize or choose a sequence area. This is available only for students who wish to become highly specialized in a specific area of rehabilitation.

### Admissions

Beyond the general graduate school admissions standards, the following procedures and requirements apply:

1. An undergraduate grade-point average on a 4.0 scale of at least 2.7 overall or in the last 60 hours is required.
2. A personal interview with the department chair is required. If this is impractical, the chair will designate an alternative for a pre-acceptance interview.
3. The Department of Rehabilitation Counseling evaluates the applicant's fitness for a career in rehabilitation counseling. Careful attention is given to previous work experience, academic background, scholarship, and emotional maturity. The application is then reviewed and passed upon by the Admissions Committee.

Applicants for the Master of Science in rehabilitation counseling must have a satisfactory score on the Graduate Record Examination or the Miller Analogies Test.

### Transfer Credit

A maximum of six semester hours of acceptable graduate credit earned in a degree program at an accredited institution but not applied toward

the M.S. degree. Such credits will be evaluated for acceptance purposes at the completion of nine semester hours of work in the graduate program in rehabilitation.

### Candidacy

Admission to graduate study does not constitute candidacy for a degree. Rather, a student who has been admitted to graduate study is advanced to degree candidacy upon the recommendation of the department in which the degree is sought. Advancement to degree candidacy requires that the candidate must have completed between nine and 15 semester hours of graduate study with a minimum grade-point average of 3.0; demonstrated clearly the aptitude and ability to pursue graduate work, including independent study; exhibited a commitment to rehabilitation counseling as a profession; demonstrated promise for a successful career in the field selected in terms of temperament and personality. Admission to degree candidacy is not an automatic process, but rather the application for candidacy is approved by the department only after careful evaluation of all pertinent factors.

### Requirements for the Degree of Master of Science in Rehabilitation Counseling

In addition to general graduation requirements

1. Students must complete a minimum of 39 graduate semester credits, approved by the chairman, exclusive of any credit for supervised clinical practice for rehabilitation counselors with an overall grade-point average of 3.0 or above.
2. Application to degree candidacy may be made after the student has demonstrated his ability to pursue work of graduate caliber by satisfactorily completing a semester of residence credits (nine credits minimum; 15 credits maximum). Admission to degree candidacy is given upon certification of acceptable records of achievements by the student's advisor.
3. All students must complete supervised clinical practice (internship) for rehabilitation counselors under the direction of the faculty and immediate supervision of a qualified person in an approved agency or facility. Before internship can begin, all students must complete required practicum work approved by the faculty.
4. All students must pass a comprehensive examination. It is administered by the chairman after students have completed a minimum of 30 graduate credits.



### Supervised Clinical Practice

Supervised clinical practice in a rehabilitation agency setting is required of all students. Clinical practice provides an opportunity for students to develop techniques and skills in connection with the total rehabilitation process. It gives them an opportunity for application of theory in the practice of rehabilitation counseling and case management in a rehabilitation setting. Provided under the direction of the faculty and the immediate supervision of qualified personnel in approved rehabilitation agencies or facilities, supervised clinical practice constitutes full-time study for one semester.

Voluntary activities or introductory field experience may not be substituted for, nor counted toward, supervised clinical practice.

Numerous agencies and organizations in Virginia and other states have cooperated with the Department of Rehabilitation Counseling to provide students with opportunities for supervised clinical practice. The primary sources of training are state-federal vocational rehabilitation agencies, Veterans Administration, Employment Security Commission, social service departments, correctional institutions, hospitals, clinics, sheltered workshops, and evaluation centers. The disability areas have included physical (e.g., spinal cord injury, visual impairments, orthopedic disabilities, speech, and hearing disorders, etc), psychiatric, mental retardation, alcoholism, drug addiction, public offenders, the disadvantaged, etc. The student's advisor will be able to provide the names, addresses, and telephone numbers of agency super visors who have worked with students in the past. Information regarding a variety of community resource directories is available also.

For the Advanced Certificate in Professional Counseling Program, the supervised clinical practice experience is designed to meet some of the specific needs of the individual student. The exact objectives, experiences, and evaluation procedures are agreed upon prior to the initiation of the course. Hours in direct supervision may be submitted to the Board of Professional Counselors to satisfy, in part, the supervision requirements for licensure as a professional counselor.

### MINOR IN REHABILITATION SERVICES

The minor in Rehabilitation Services provides a basic understanding of people with mental and *physical disabilities* and how to help them lead more productive lives. The Minor is relevant not

only to future graduate study in the profession of rehabilitation counseling but also to a number of other rehabilitation-related professions such as clinical and counseling psychology, social work, special education, corrections, therapeutic recreation, occupational therapy, physical therapy, and so forth. Although baccalaureate employment is possible under the supervision of graduate-trained professionals in most of these disciplines, the desirable ultimate goal for most students would normally be a graduate-level degree.

A variety of majors can be considered for a combination with a Minor in Rehabilitation Services for baccalaureate-level employment under supervision or future graduate study in rehabilitation counseling or a rehabilitation-related profession. The student should consider a major that includes a broad liberal arts foundation. For students with client services interests, a major in psychology, social work, sociology, special education, juvenile (administration of justice), or therapeutic recreation (recreation, parks and tourism) would be highly suitable. Students in pre-physical therapy, occupational therapy and pre-occupational might be interested in some rehabilitation services courses as electives. Students with organizational, political, or legal interests who wish to have a different type of impact on the needs of people with disabilities may wish to consider a major in business administration, economics, urban studies and planning, political science, or legal studies (administration of justice). The latter students might wish to consider graduate study in such areas as human resources management, health administration, public administration, urban and regional planning, or law.

The completion of the Minor in Rehabilitation Services will require a minimum of 18 semester hours of study. Some flexibility in regard to the selection of specific courses exists depending on a student's need and interests. Students should consult an academic advisor in the department. The minor includes a choice of two options:

**General Rehabilitation Option.** The general rehabilitation option provides an introduction to the rehabilitation of people with physical or mental disabilities. Practicum activities will provide the opportunity for a student to focus in a particular activity such as interpersonal communications, case management, vocational evaluation, job development, supported employment, advocacy, or human resources planning, or a particular disability such as mental retardation, spinal cord injury, deafness, visual impairment, brain injury, or mental illness.

### **Alcohol and Drug Rehabilitation Option.**

The alcohol and drug rehabilitation option involves a specialization in the rehabilitation of people with a substance abuse disability. A complete specialization is offered in this area because it is not only a major disability in itself but also is the one disability most frequently associated with every other disability. The course in the alcohol and drug option, along with practicum study in a substance abuse setting, is designed to help a student become eligible for state certification as a substance abuse specialist.

### **BACHELOR OF GENERAL STUDIES DEGREE (Rehabilitation Services Focus)**

The interest of most students should be met by the interdisciplinary combination of a minor or electives in rehabilitation services with another major. However, a few students may better benefit from the interdisciplinary Bachelor of General Studies Degree with a focus in the rehabilitation services area if they meet the following criteria: (1) above average academic achievement (at least 2.7 GPA or higher in a minimum of 30 semester hours of previous study); (2) maturity in judgment and learning; (3) high motivation to develop a unique interdisciplinary program; and (4) interest in graduate study in rehabilitation counseling or a related field.

Possible rehabilitation services focus area examples for the interdisciplinary Bachelor of General Studies Degree could be: Substance Abuse in Geriatrics (with gerontology), Deaf Rehabilitation and Services (with psychology), Employee Assistance and Organization (with business administration and psychology), Arts and Crafts Rehabilitation (with therapeutic recreation and education), Client Advocacy and Rehabilitation Services (with legal studies and political science), Community Services Coordination in Rehabilitation (with social work), or Supported Employment for Mental Retardation (with special education and psychology). Programs are designed to meet the general guidelines of the National Council on Rehabilitation Education, the only formally articulated national standard on baccalaureate rehabilitation education.

Prospective students interested in the Bachelor of General Studies Degree should contact the Office of Nontraditional Studies at VCU.

For additional information about the Department of Rehabilitation Counseling's undergraduate programs and requirements for promotion and graduation, write to the Chair of the Department of Rehabilitation Counseling, Virginia Com-

monwealth University, P.O. Box 842030, Richmond, Virginia 23284-2030, (804) 828-1132.

### **FACULTY**

#### **Professors—**

Hardy (Chair)	Gandy
Martin	Rule

#### **Associate Professors—**

Chandler	Lawton
Luck	

### **UNDERGRADUATE COURSES IN REHABILITATION SERVICES (REH)**

**201 Introduction to Rehabilitation Services.** Semester course; 3 lecture hours. 3 credits. This course has been designed to expose the student to the history and development of the rehabilitation movement. Topics explored include basic concepts and philosophies of rehabilitation, psychological and vocational adjustments of the disabled, and an examination of selected rehabilitation methods.

**202 General Alcohol and Drug Studies.** Semester course; 3 lecture hours. 3 credits. This course is designed to help the student develop an appreciation of society's attitude about the use of drugs, particularly alcohol, and each individual's responsibility in decisions about the use of drugs. Discussion is offered on specific characteristics of drugs, how addiction occurs, and role of rehabilitation after addiction.

**312 Contemporary Rehabilitation Services.** Semester course; 3 lecture hours. 3 credits. Role of the rehabilitation worker in the development of human resources. Organization of service delivery systems and community resources. The relationship of rehabilitation services to societal needs and identification of potential recipients of service.

**321 Introduction to Alcoholism and Drug Abuse.** Semester course; 3 lecture hours. 3 credits. Prerequisite: REH 202. Introduction to alcoholism/drug abuse as a progressive family disease with consideration of basic contributing factors (physiological, psychological, and sociocultural builds on foundation established in REH 202); exposure to multidisciplinary rehabilitative approaches to arresting the disease, as well as some knowledge of intervention; brief mention of the highlights of the continuum of care available in the recovery process.

**322 The Growth Process of the Alcoholic and Drug Addict.** Semester course; 3 lecture hours. 3 credits. Prerequisite: REH 321. This course traces the progression of recovery from the isolation associated with the addiction process to a variety of modalities utilized in interrupting it as well as approaches designed to provide involvement and to maintain integration leading to an ongoing growth process.

**350 Applied Rehabilitation Methods.** Semester course; 3 lecture hours. 3 credits. Methods of intervention in rehabilitation, emphasizing the development of interpersonal skills, e.g., communication skills, interviewing techniques.

**360 Work Evaluation and Adjustment in Rehabilitation.** Semester course; 3 lecture hours. 3 credits. Provides an overview of principles of determining work potential and overcoming maladjustment to work. Characteristics of work

environments, assessment of work potential, and contemporary problems of work evaluation and work adjustment in rehabilitation services.

**370 Job Development and Placement.** Semester course; 3 lecture hours. 3 credits. An examination of the characteristics of the local labor market, the work barriers confronting special populations, and the methods and techniques involved in putting people to work. Special emphasis will be placed upon understanding employer demands, task and skill analysis, identifying attributes of clients, client/job matching skills, and follow-up techniques.

**452 Crisis Intervention with the Alcoholic.** Semester course; 3 lecture hours. 3 credits. Prerequisites: REH 321, 322, 523, or permission of instructor. Focus on the application of concepts discussed in theory in the recovery process course; sharing of difficulties and successes with crisis intervention by individuals already in the field; provision of new and more refined techniques under the direction of experts demonstrating their applicability.

**456 Interpretative Processes in Rehabilitation.** Semester course; 3 lecture hours. 3 credits. This course is concerned with methodology of collection, analysis, synthesis, and effective utilization of education, social, psychological, vocational, and medical information in the rehabilitation process.

**465 Basic Alcoholism and Drug Case Management.** Semester course; 3 lecture hours. 3 credits. Prerequisites: REH 321, 322, and permission of instructor. This course is an overview of the components involved in case management of the alcoholic, drug abuser, and his/her family. It will explore the interrelationship of the basic skills utilized by an alcoholism and drug abuse counselor and attempt to coordinate these functions into a total procedure.

**470 Seminar in Manpower Services.** Semester course; 3 seminar hours; 3 credits. Prerequisite: permission of instructor. A senior seminar designed to examine the role of a new manpower professional in a manpower agency. Topics include agency and unit goal analysis, role and job identification, authority structure, decision making, accountability, subordination, communications patterns, report writing, and survival skills.

**491 Topics in Rehabilitation.** Semester course; 3 lecture hours. 3 credits, maximum 6 credits per semester; maximum total of 9 credits in all departmental topics courses which may be applied to the major. An in-depth study of specific content areas in rehabilitation services. See Schedule of Classes for specific topics to be offered each semester.

**494 Practicum in the Rehabilitation of the Alcoholic.** Semester course. 3, 6, 9, or 12 credits. Prerequisite: permission of instructor. Opportunity to observe and participate in the 22 tasks of the alcoholism worker as outlined in the Littlejohn Report and required for certification; provision for general direction and supervision by the alcoholism personnel with the department and the direct supervision by a qualified person with the agency or facility.

**495 Practicum in Rehabilitation.** Semester course. 3, 6, 9, or 12 credits. Prerequisite: permission of instructor. Designed to provide opportunities for observation and participation in rehabilitation and related settings. Experiences are systematically related to theoretical concepts.

## GRADUATE COURSES IN REHABILITATION COUNSELING (REH)

**502 History and Techniques of Manual Communication I.** Semester course; 3 credits. A study of the basic principles of manual communication through nonverbal techniques, eye-contact training, fingerspelling, and basic patterns of American Sign Language Systems. Also a focus on history and development and various methods of communication with deaf persons.

**503 History and Techniques of Manual Communications II.** Semester course; 3 credits. A review and continued study of the development and techniques of basic sign language with emphasis upon additional sign vocabulary acquisition and improvement of expressive and receptive skills.

**504 Advanced Manual Communication: AMESLAN.** Semester course; 3 credits. A comprehensive and in-depth study of American Sign Language (AMESLAN) as an independent language of the deaf with low verbal skills and emphasis on English and sign language idioms not known in most forms of manual communications.

**521 Overview on Alcoholism.** Semester course; 3 credits. Overview of alcoholism as a progressive, family disease which can be arrested by a multidisciplinary, rehabilitative approach; consideration of the etiology of addiction from physiological, psychological, and sociocultural viewpoints as well as methods of intervention at various stages; description of the highlights of the continuum of care available in the recovery process.

**522 Recovery of Alcoholism.** 3 credits. Prerequisite: REH521 Overview on Alcoholism. Exploration of the denial system present in U.S. society which complicates the early intervention and treatment of a progressive, family disease; presentation of new hope for the alcoholic and his family in the attempts being made in certain areas of society to begin the recovery process early; description of approaches proving to be helpful in facilitating the alcoholism professions in guiding the alcoholic and his family from isolation to involvement and integration.

**523 Principles, Methods, and Techniques in Treatment of the Alcoholic.** 3 credits. Prerequisites: REH 521 and 522 or permission of instructor. Integration of principles, methods, and techniques utilized in the recovery process of alcoholism and drug abuse especially in group work; exploration of the alcoholic, with provision for group involvement, co-facilitation, and practice counseling sessions.

**525 Introduction to Rehabilitation.** 3 credits. This course is designed to give the student a comprehensive overview of the rehabilitation process. It emphasizes its historical, philosophical, ethical, social, and legal aspects. Special attention is devoted to the professional aspects of rehabilitation counseling, the need for it and the skills and functions of the counselor.

**527 Rehabilitation of the Industrially Injured Client.** Semester course; 3 lecture hours. 3 credits. This course emphasizes the unique needs of the industrially injured client and current methods of rehabilitation and programs available through insurance companies and governmental agencies.

**553 Directed Readings in Rehabilitation.** 3-6 credits. Topical course. Provides an opportunity for students to intensify understanding in one or more areas of rehabilitation through directed readings under supervision of a faculty member. The study experience must be synthesized in a paper and a written or oral examination before a faculty committee.

**559 Current Problems in Rehabilitation.** 3-6 credits. Topical seminar. A study of development and implications resulting from rehabilitation research and demonstration activities. Agency problems related to staff improvement and expansion of rehabilitation services and facilities will also be considered as well as reviews of specific disability problems and trends in rehabilitation.

**540 Directed Readings in Alcoholism.** Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Opportunity to investigate and pursue in depth a particular concept encountered in the alcoholism and drug abuse concentration courses, or to study in detail a particular problem in alcoholism or drug abuse while working in the field under the direction of the alcoholism addiction personnel in the department.

**551 Treatment of the Alcoholic with Significant Others.** Semester course; 3 lecture hours. 3 credits. Prerequisites: REH 521, 522, and 523 or permission of instructor. Stress on the importance of the family disease concept of addiction utilized throughout the concentration series; demonstrations and role-playing of situations involving the alcoholic, drug abuser, and significant others provided; discussions of multiple-impact family therapy and other approaches developed relevant to the alcoholic and drug abuser.

**559 A Survey of Rehabilitation of Blind and Visually Impaired Individuals.** 3 credits. The purpose of this course is to acquaint the student, rehabilitation counselors, and other personnel working in related areas with problems encountered in the rehabilitation of blind and partially sighted persons.

**561 Work Evaluation Techniques for Rehabilitation.** 3 credits. An in-depth examination of the methods and techniques utilized in determining employment potential and the role of the work evaluator in the rehabilitation process. Specific procedures and approaches are analyzed including the TOWER System, Singer-Graflex System, and other methods currently utilized in rehabilitation services.

**562 Work Adjustment Techniques for Rehabilitation.** 3 credits. An in-depth analysis of methods utilized in overcoming maladaptive worker behavior in rehabilitation services including group process, sheltered workshops, and nonverbal techniques. The role and function of adjustment personnel in the rehabilitation process. Current problems and research in methods of adjustment.

**563 Independent Living in Rehabilitation.** 3 credits. This course will offer students an opportunity to acquire the knowledge and skills necessary for providing services to severely disabled people in the area of independent living. Emphasis will be placed on evaluation and adjustment approaches for people who are clients of public and private rehabilitation centers, employment workshops, group homes, and in the emerging centers for independent living in rehabilitation.

**593 Field Work Practicum.** 3 credits. Designed to complement and follow REH 520, this eight-week on-the-job experi-

ence is jointly supervised by a university faculty member and by the student's training supervisor in the public or private rehabilitation agency or facility where the student is employed. A choice of exercises is offered with required written reports of each exercise selected. These exercises are programmed to encourage the further integration of concepts, practices, and skills learned in REH 520 with actual agency policy and service delivery. Enrollment is limited to eligible employees of public and private vocational rehabilitation agencies and facilities who have completed REH 520.

**607 Community Resources.** 3 credits. This course emphasizes the means by which the community uses its resources and services to meet the needs of handicapped persons. It provides for study and discussion of the nature and organization of community resources as they relate to rehabilitation, availability of community resources through public and private agencies and facilities including employment potentials, problems in the development and utilization of community resources, observational visits to key agencies, and lectures by representatives of various rehabilitation programs.

**611 Individual Counseling Approaches in Rehabilitation.** 3 credits. This course is designed to acquaint students with various approaches involved in the individual counseling of rehabilitation clients. Emphasis will be placed on principles and techniques which assist individuals to develop a better understanding of vocational, educational, and personal adjustment problems related to severe and multiple disabilities and to make realistic plans regarding solutions to these problems. Audio-visual tape experiences will be offered.

**612 Group Counseling Approaches in Rehabilitation.** 3 credits. This course is designed to acquaint students with various approaches involved in the group counseling of rehabilitation clients. Emphasis will be placed on principles and techniques which promote the development of effective interpersonal communications, decision making and leadership as they concern vocational, educational, and personal adjustment problems related to severe and multiple disabilities. Audio-visual tape experiences will be offered.

**613 Advanced Rehabilitation Counseling Seminar.** 3-9 lecture hours. 3-9 credits. Prerequisites: REH 611 and 612 or permission of instructor. This course is designed to provide an opportunity for students to undertake a more in-depth study of selected approaches to individual and/or group counseling of rehabilitation clients. Principles and techniques relevant to vocational, educational, and personal adjustment problems related to severe and multiple disabilities will be systematically explored and studied. Audiovisual tape experience will be offered.

**614 Counseling, Death and Loss.** 3 lecture hours. 3 credits. Prerequisites: REH 611 or permission of instructor. Explores the psychosocial processes of adaptation to severe losses such as those occasioned by the onset of disability, death, and developmental life changes. Emphasizes the knowledge and skills required by rehabilitation counselors in dealing with losses experienced by their clients.

**623 Career Development.** 3 credits. Provides an orientation to occupations and career development information for rehabilitation counselors, study of the literature on careers and occupational information, writing the job analyses, visits to selected business and industrial establishments employing handicapped persons, and job analyses related to the employment of handicapped individuals.

**625 Measurement and Evaluation in Rehabilitation.** 3 credits. Consideration will be given to the selection of tests for rehabilitation clients; the determination of need for testing, administering and interpreting tests; adaptation of tests to special disability groups; suggestions for the integration of tests results with the overall rehabilitation diagnosis; the establishment of local norms for rehabilitation clients; the work-evaluation report; and interpretation of test results to client. Tests of achievement, aptitude, intelligence, interests, and personality will be critically examined. Laboratory fee \$20.00.

**630 Advanced Alcoholism and Drug Case Management.** 3 credits. The course is a study of the elements of case management by the alcoholism and drug abuse counselor from case finding to termination. This process will be explored in comparison with other helping disciplines. In addition to a comprehensive examination of the many skills required for case management, there will be opportunities for class practice of case management.

**633 Rehabilitation Case Studies.** 3 credits. This course provides for critical analyses of representative rehabilitation cases. Rehabilitation case records are utilized as a basis for presenting an understanding of the handicapped client and his problems, the rehabilitation casework processes and diagnoses, and the provision of services.

**635 Theory and Practice in Prevention of Alcoholism.** 3 credits. Prerequisite: permission of instructor. Utilization of human service agencies and community at large to affect attitude and behavior change concerning the use and abuse of alcohol and other drugs; development of skills in educating, coordinating, motivating, planning, and implementing in prevention area; project in prevention.

**640-641 Medical Information for Rehabilitation Counselors.** 3-6 credits. This course provides medical information for rehabilitation counselors and introduces students to medical terminology. It provides knowledge of the etiology, prognosis, methods of treatment, effects of disabling conditions, and implications for the rehabilitation counselor. Physician-counselor relationships are emphasized as is the interpretation of medical reports. (This course is offered in cooperation with the Department of Physical Medicine and Rehabilitation, School of Medicine.)

**642 Psychiatric Information for Rehabilitation Counselors.** 3 credits. This course provides psychiatric information for rehabilitation counselors so that they may have an understanding of disabling psychiatric conditions as well as the emotional aspects of physical disabilities. It deals with impairments of a mental origin including mental retardation, behavioral disorders, neuroses, and psychoses — both organic and functional, as well as convulsive disorders. Emphasis is placed on physical, emotional, and social factors that contribute to the various mental illnesses.

**644 Alcohol and Human Behaviors.** 3 credits. Prerequisites: REH 521, 522, 523, and 695 or permission of instructor. Understanding the significance of behavior as a tool in diagnosing, treating, and/or referring the addict; appreciation of particular cues to observe the predominant behavior associated with living problems and reflected by the alcohol or drug abuser.

**645 Delivery Services to the Alcoholic.** 3 credits. Prerequisites: REH 521, 522, 523 or permission of instructor. Expo-

sure to the 22 professional tasks of the alcoholism and drug abuse counselor through discussion centered around examples brought into class from clinical experience; understanding how these tasks, dealing with the alcoholic and drug abuser and his family, apply to different settings; a summary of the other five parts in the alcoholism concentration culminating in a philosophy of the alcoholism and drug abuse counselor.

**650 Occupational Alcoholism and Drug Abuse Program Development.** 3 credits. This course is designed to provide information and data for graduate students on the importance of the effects of alcohol and other drugs in a work setting. Various types of programs used by business, industry, and other organizations to deal with such employees will be presented. The course context was developed to provide the student with the opportunity to gain knowledge and skills necessary to design, implement, and maintain systems to reduce human and productivity losses due to alcoholism/drug addiction and its effects.

**653 Disability and Support Systems.** 3 credits. This course will offer students an opportunity to acquire knowledge and skills in working with the social, medical, and vocational organizations which comprise the interpersonal environment in which the client's rehabilitation takes place. Emphasis will be placed on evaluating the strengths and weaknesses of the various human systems in which the client lives and works. Theories and techniques will be taught which can maximize the rehabilitative potential of these systems.

**655-656 Seminar in Rehabilitation.** 3-6 credits. Current trends, problems, and developments in rehabilitation are discussed. Students pursue a special interest area such as cultural deprivation, disability determination, work adjustment, work evaluation, etc., and share information and experience mutually with the group. Lectures, reports and group discussions are utilized.

**672 Research in Rehabilitation.** 3-6 credits. The student undertakes a research project with the assistance of a faculty member. He is required to write a paper and pass an examination in order to receive credit.

**681-689 Institutes and Workshops.** Orientation institutes and other short-term training programs are offered for rehabilitation counselors newly recruited to the rehabilitation field and for the further professional development of those already employed. Content will vary according to the aims of the institutes or workshops. Length of time and number of credits are announced prior to each institute or workshop.

**691 Seminar in Special Problems in Rehabilitating Handicapped Persons.** 3-6 credits. Topical seminar. This course is presented in a series of units. Each unit places emphasis on a special disability group such as paraplegic, deaf and hard of hearing, alcoholic, epileptic, cerebral palsied, cardiac, blind, mentally retarded, mentally ill, drug addict, aged, etc. The incidence and nature of disabilities, psychological factors, vocational problems, and specialized treatment and placement facilities required and techniques of team approach; use of rehabilitation centers and specialized facilities and use of consultants.

**693 Introduction to Field Experiences for Rehabilitation Counselors.** 3 credits. This course provides for concurrent field experience. It is designed for students who have no

training or experience in interviewing and counseling in rehabilitation settings.

**694 Practicum in Job Placement in Rehabilitation Counseling.** 3 credits. This course provides for actual experience in rehabilitation counselor activities, with emphasis on placement techniques — including itinerary planning, plant surveys, job analysis, placement, and follow-up.

**695 Supervised Clinical Practice in Alcoholism.** Block assignment; 9 credits. Prerequisites: REH 521, 522, and 523. Practical learning by observing and doing the 22 tasks of the alcoholism counselor as outlined in the Littlejohn Report; general direction and supervision by alcoholism personnel

within department and direct supervision by a person qualified within the facility to discuss counselor/client problems.

**696-697 Supervised Clinical Practice.** Block assignments; 9 credits. Practical learning by observing and doing. Trainees have many opportunities for the application of theory in the practice of rehabilitation counseling and case management and/or work evaluation and work adjustment in a rehabilitation setting. Training is provided under the general direction and supervision of the faculty and the direct supervision of a qualified person within the agency or facility. Students meet regularly with the clinical practice supervisor within the agency or facility to discuss clients' problems and possible solutions.





# PART VII

## BOARD ▼ ADMINISTRATION ▼ AND ▼ FACULTY ▼ 1994-1995

### BOARD OF VISITORS

Appointed by the Governor of Virginia

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Richmond

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Constantine N. Dombalis

Richmond

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Assistant Dean, Administrative and Fiscal  
Affairs

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Dean

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Executive Associate Dean, Academic Affairs

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Continuing Education

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Assistant Dean, Administrative Affairs

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Assistant Dean, Research

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### School of Nursing

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Dean

Richard R. Cowling, B.S.N., M.S., Ph. D.  
Associate Dean, Graduate Programs

Janet B. Younger, B.S., M.Ed., Ph.D., M.S.  
Associate Dean, Undergraduate Programs

Anthony J. DeLellis, B.A., M.A., Ed.D.  
Assistant Dean, Administration

### School of Pharmacy

John S. Ruggiero, B.S., M.S., Ph.D.  
Dean

C. Eugene White, B.S., J.D.  
Associate Dean, Students

Graham C. Windridge, Pharm.D., Ph.D.  
Associate Dean, Administration

Thomas P. Reinders, B.S., Pharm.D.  
Assistant Dean, Clinical Affairs

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- William L. Dewey, B.S., M.S., Ph.D.  
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Assistant Dean, School of Graduate Studies
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Director, Environmental Health and Safety
- Herbert B. Chermiside, B.A., M.A.  
Director, Sponsored Programs Administration

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- Edward F. Ansello, A.B., M.Ed., Ph.D.  
Director, Virginia Center on Aging
- Zita M. Barree, B.S., M.B.A.  
Financial Aid Coordinator, School of Dentistry
- William A. Bost, B.S., M.A., Ed.D.  
Executive Director, University Enrollment Services
- Anil Chatterji, B.Sci., M.Sci., M.S.  
Director, Health Sciences Computing Services
- Robert L. Clifton, A.B., M.A., Ed.D.  
Dean of Student Affairs, MCV Campus
- John G. Corazzini, A.B., M.A., Ph.D.  
Director, University Counseling Services
- Jennings G. Cox, B.S., M.S., Ph.D.  
Coordinator, MCV Campus, University Counseling Services
- John J. Driscoll  
Director for Systems, University Enrollment Services
- I. David Goldman, B.A., M.D.  
Director, Massey Cancer Center
- Alfred B. Houghton, B.A., J.D.  
Director for Records and Registration, University Enrollment Services
- Betty Anne Johnson, B.A., M.D., Ph.D.  
Director, University Student Health Services
- Charles R. Kinder, B.S., M.A., Ph.D.  
Director for Financial Aid, University Enrollment Services
- Barbara J. Ford, B.A., M.A., M.S.  
Director, University Library Services
- William A. Robertson, Jr., B.S., M.Ed.  
Executive Deputy Director, University Enrollment Services
- Donald G. Roebuck, B.A., M.S.Ed.  
Director, MCV Campus Student Academic Support Services for Students with Disabilities

- Bassam F. Khoury, B.A., M.A.  
International Student Advisor
- Thomas L. Tucker, B.S., M.S.  
Director, Health Careers Opportunity Program, MCV Campus
- Marc T. Vernon, B.S., M.P.A.  
Assistant Director for UES/Financial Aid (School of Medicine)
- Horace W. Wooldridge, Jr., B.A., M.Ed.  
Director for UES/Admissions

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- Peter F. Rapp, B.A., M.B.A.  
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- Suzette M. Silverman, B.A.  
Director, Marketing and Public Relations

## FACULTY

**Faculty listings include appointments made by the Board of Visitors on March 17, 1994.**

- Abbey, Linda J. (1990)<sup>1</sup> *Assistant Professor of Internal Medicine* B.S., 1976, Muhlenberg College; M.D., 1979, Duke University.
- Abbey, Louis M. (1971) *Professor of Oral Pathology* A.B., 1963, Earlham College; D.M.D., 1967, M.S., 1971, Tufts University.
- Abbott, David M. (1975) *Associate Professor of Periodontics* B.S., 1968, Madison College; D.D.S., 1972, University of North

<sup>1</sup>Year of first appointment.

- Carolina; M.S.D., 1975, University of Minnesota.
- Abd-Elfattah, Anwar S. (1988) *Professor of Surgery* B.S., 1970, M.S., 1974, Alexandria University, Egypt; Ph.D., 1979, Mississippi State University.
- Abernathy, Glen N., (1990) *Clinical Instructor in Pharmacy and Pharmaceuticals* B.S., 1971, Medical College of Virginia of Virginia Commonwealth University.
- Abernathy, Ted R. (1974) *Clinical Instructor in Pediatrics* B.A., 1964, Virginia Military Institute; M.D., 1970, Medical College of Virginia of Virginia Commonwealth University.
- Abraham, Donald J. (1988) *Professor and Chair, Department of Medicinal Chemistry* B.S., 1958, Pennsylvania State University; M.S., 1959, Marshall University; Ph.D., 1963, Purdue University.
- Abraham, Isaac (1993) *Assistant Professor of Community Health Nursing* B.S., 1980, Medical College of Virginia of Virginia Commonwealth University; M.S.N., 1990, University of Virginia.
- Abubaker, A. Omar (1991) *Assistant Professor of Oral and Maxillofacial Surgery* B.D.S., 1975, University of Alexandria, Egypt; Ph.D., 1984, D.M.D., 1990, University of Pittsburgh.
- Aceto, Mario D. (1973) *Professor of Pharmacology and Toxicology* B.S., 1953, Providence College; M.S., 1956, University of Maryland; Ph.D., 1958, University of Connecticut.
- Adams, Anne C. (1980) *Associate Clinical Professor of General Practice Dentistry* B.A., 1967, Radford College; M.S., 1975, D.D.S., 1979, Medical College of Virginia of Virginia Commonwealth University.
- Adams, Randy (1979) *Assistant Clinical Professor of Pediatric Dentistry* B.A., 1968, Hampton Institute; D.D.S., 1972, Howard University.
- Adams, Robert Crady, Jr. (1978) *Assistant Clinical Professor of Pharmacy and Pharmaceuticals* B.S., 1965, University of Tennessee.
- Adams, Ruma G. (1992) *Instructor in Internal Medicine* M.B., Ch.B., 1986, University of Glasgow, Scotland, U.K.
- Adelaar, Robert E. (1976) *Professor of Orthopaedic Surgery* B.S., 1966, B.A., 1967, Lehigh University; M.D., 1970, University of Pennsylvania.
- Adkins, Julian (1977) *Instructor in Psychiatry* B.A., 1949, Randolph-Macon College; M.S.S.W., 1959, Richmond Professional Institute.
- Adkins, William E. (1987) *Assistant Clinical Professor of Obstetrics and Gynecology* A.S., 1974, Tidewater Community College; B.S., 1975, Old Dominion University; M.D., 1979, Eastern Virginia Medical School.
- Adler, Robert A. (1984) *Professor of Internal Medicine* B.A., 1967, M.D., 1970, Johns Hopkins University.
- Adler, Stuart P. (1979) *Professor of Pediatrics and Chair, Division of Pediatric Infectious Diseases* B.A., 1968, M.D., 1971, Johns Hopkins University.
- Adler, Tracey K. (1985) *Assistant Clinical Professor of Physical Therapy* B.S., 1979, Georgia State University; M.S., 1984, Medical College of Virginia of Virginia Commonwealth University.
- Aghdami, Aliasghar (1973) *Professor of Anesthesiology* M.D., 1957, Tabriz University, Iran.
- Ahmad, Mobashar (1993) *Clinical Instructor in Internal Medicine* M.B.B.S., 1983, Nishtar Medical College of Punjab University, Pakistan.
- Akosah, Kwame (1993) *Assistant Professor of Internal Medicine* B.S., 1981, Westminster College; M.D., 1985, Howard University.
- Akridge, Kathleen M. (1991) *Clinical Instructor in Maternal-Child Nursing* B.S.N., 1971, St. John College; M.S., 1985, Medical College of Virginia of Virginia Commonwealth University.
- Albrecht, G. Thomas, Jr. (1989) *Assistant Clinical Professor of Pediatrics* B.A., 1975, M.D., 1983, University of Virginia.
- Alexander, John M. (1975) *Associate Clinical Professor of Oral and Maxillofacial Surgery* D.D.S., 1966, Medical College of Virginia.
- Ali, M. Karim (1989) *Associate Clinical Professor of Otolaryngology* M.D., 1974, University of Kabul, Afghanistan.
- Ali, M. Moynuddin (1981) *Assistant Professor of Radiation Oncology* M.B., B.S., 1966, Gandhi Medical College, India.
- Allen, Charles R., Jr. (1990) *Clinical Instructor in Pharmacy and Pharmaceuticals* B.S., 1981, Medical College of Virginia of Virginia Commonwealth University.
- Allen, Edward H. (1991) *Clinical Instructor in Pediatric Dentistry* B.A., 1948, Bridgewater College; M.A., 1951, University of North

- Carolina; D.D.S., 1957, Medical College of Virginia.
- Allen, Jody H. (1984) *Assistant Clinical Professor of Pharmacy and Pharmaceutics* B.S., 1979, University of North Carolina; Pharm.D., 1981, Medical College of Virginia of Virginia Commonwealth University.
- Allison, Ok Chon (1990) *Clinical Instructor in Community and Psychiatric Nursing* B.S., 1978, Canal Zone College, Panama; B.S.N., 1985, M.S.N., 1986, Mississippi University for Women.
- Allocca, Paula N. (1993) *Clinical Instructor in Community and Psychiatric Nursing* B.S., 1987, M.S., 1991, Medical College of Virginia of Virginia Commonwealth University.
- Allport, Catherine D. (1986) *Clinical Instructor in Maternal-Child Nursing* B.S., 1964, Medical College of Virginia; M.P.H., 1966, University of North Carolina.
- Al-Mafeen, Cheryl (1989) *Assistant Professor of Psychiatry* B.S., 1981, M.D., 1983, Howard University.
- Al-Mateen, K. Bakeer (1992) *Assistant Professor of Pediatrics* M.D., 1984, Howard University.
- Altman, Marian S. (1992) *Clinical Instructor in Adult Health Nursing* B.S., 1983, M.S., 1990 Medical College of Virginia of Virginia Commonwealth University.
- Alty, Lisa T. (1988) *Affiliate Assistant Professor of Medicinal Chemistry* B.S., 1982, College of William and Mary; Ph.D., 1987, Medical College of Virginia of Virginia Commonwealth University.
- Ames, James E. (1988) *Assistant Clinical Professor of Nursing Administration and Information Systems* B.S., 1973, Hampden-Sydney College; A.M., 1975, Ph.D., 1977, Duke University.
- Anderson, Frank P. (1993) *Assistant Professor of Pathology* B.A., 1977, B.S., 1980, University of Tennessee; M.S., 1982, Louisiana Tech University; Ph.D., 1988, Medical College of Virginia of Virginia Commonwealth University.
- Anderson, Ralph L. (1981) *Associate Clinical Professor of Orthodontics* B.S., 1960, Virginia State College; D.D.S., 1970, Medical College of Virginia of Virginia Commonwealth University.
- Anderson, Ruth W. (1990) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1963, Medical College of Virginia.
- Andrako, John D. (1978) *Clinical Instructor in Pediatrics* B.S., 1971, University of North Carolina-Chapel Hill; M.D., 1975, Medical College of Virginia of Virginia Commonwealth University.
- Andrews, Jack Preston (1963) *Assistant Clinical Professor of Pediatrics* M.D., 1957, Medical College of Virginia.
- Ansell, Burness F., Jr. (1967) *Clinical Instructor in Internal Medicine* B.S., 1953, Hampden-Sydney College; M.D., 1957, Medical College of Virginia.
- Ansello, Edward F. (1989) *Professor of Gerontology and Director, Virginia Center on Aging* A.B., 1966, Boston College; M.Ed., 1967, Ph.D., 1970, University of Missouri.
- Anthony, Scott B. (1981) *Assistant Clinical Professor of Surgery* B.S., 1969, Davidson College; M.D., 1974, Washington University.
- Archer, Gordon L. (1975) *Professor of Internal Medicine and Chair, Division of Infectious Diseases* B.A., 1965, Washington and Lee University; M.D., 1969, University of Virginia.
- Archer, Phillip W. (1990) *Affiliate Assistant Professor of Physiology* B.A., 1977, Hampton University; M.A., 1982, Central Michigan University; Ph.D., 1988, Howard University.
- Archer, Richard D. (1991) *Assistant Clinical Professor of Endodontics* B.A., 1977, Wake Forest University; D.D.S., 1982, University of Maryland; M.S., 1990, Ohio State University.
- Ariga, Toshio (1989) *Associate Professor of Biochemistry and Molecular Biophysics* B.S., 1966, Kitasato University, Japan; M.S., 1969, Ph.D., 1986, Chiba University, Japan; Ph.D., 1983, Niigata University, Japan.
- Arkin, David L. (1980) *Assistant Clinical Professor of Pediatrics* B.S., 1969, City University of New York; M.D., 1977, Medical College of Wisconsin.
- Armstrong, Carl W. (1983) *Assistant Clinical Professor of Pathology* A.B., 1971, Kenyon College; M.D., 1975, Case Western Reserve University.
- Armstrong, Richard H. (1972) *Assistant Clinical Professor of Psychiatry* B.S., 1953, Maine Maritime Academy; M.D., 1961, Medical College of Virginia.
- Arnfield, Mark R. (1993) *Assistant Professor of Radiation Oncology* B.Sc., 1977, M.A.Sc., 1980, University of Toronto; Ph.D., 1989, University of Alberta.

- Arnold, Gayle G. (1965) *Clinical Professor of Pediatrics* B.A., 1942, Johns Hopkins University; M.D., 1945, University of Maryland.
- Arnold, William V. (1983) *Lecturer in Patient Counseling* B.A., 1963, Southwestern at Memphis; B.D., 1966, Columbia Theological Seminary; Ph.D., 1970, Southern Seminary.
- Arrowood, James A. (1987) *Assistant Professor of Internal Medicine* B.S., 1970, University of Rhode Island; M.S., 1976, M.D., 1980, Pennsylvania State University.
- Arthur, Robert Miller (1965) *Associate Professor of Internal Medicine* A.B., 1950, University of North Carolina; M.D., 1954, Duke University.
- Ashworth, John S. (1964) *Clinical Instructor in Internal Medicine* B.A., 1954, Princeton University; M.D., 1958, Columbia University.
- Astin, Elizabeth W. (1990) *Clinical Instructor in Maternal-Child Nursing* B.S., 1963, Medical College of Virginia; M.S., 1976, Medical College of Virginia of Virginia Commonwealth University.
- Astruc, Juan A. (1967) *Professor of Anatomy* M.D., 1957, Ph.D., 1959, University of Granada, Spain.
- Atari, Nader Ahmad (1991) *Research Associate Professor of Radiation Oncology* B.Sc., 1967, Ain Shams University, Egypt; M.Sc., 1971, Ph.D., 1973, Birmingham University, U.K.
- Atterton, Frances M. (1987) *Clinical Instructor in Occupational Therapy* B.S., 1979, Lynchburg College; M.S., 1981, Medical College of Virginia of Virginia Commonwealth University.
- Atiyeh, Wasfi A. (1960) *Assistant Clinical Professor of Otolaryngology* B.A., 1948, M.D., 1952, American University of Beirut, Lebanon.
- Atkins, Carl O., Jr. (1983) *Assistant Clinical Professor of Pediatric Dentistry* B.S., 1979, University of Virginia; D.D.S., 1983, Medical College of Virginia of Virginia Commonwealth University.
- Atkins, John D. (1980) *Clinical Instructor in Pharmacy and Pharmaceutics* B.A., 1973, Duke University; B.S., 1976, Pharm.D., 1978, Medical College of Virginia of Virginia Commonwealth University.
- Atkins, Paul J. (1989) *Affiliate Assistant Professor of Pharmacy and Pharmaceutics* B.Sc., 1978, Ph.D., 1982, University of London, U.K.
- Atkins, Robert R. (1985) *Instructor in Internal Medicine* B.A., 1975, Northeastern University; M.D., 1979, University of Pennsylvania.
- Atkins, Susan E. (1992) *Assistant Clinical Professor of Surgery* B.S., 1981, Virginia Polytechnic Institute and State University; M.D., 1985, Medical College of Virginia of Virginia Commonwealth University.
- Atkinson, Deborah E. (1992) *Clinical Instructor in Psychiatry* B.S.W., 1975, M.S.W., 1976, West Virginia University.
- Atkinson, Gerald W. (1966) *Clinical Instructor in Neurology* B.A., 1952, Lincoln Memorial University; M.D., 1956, Medical College of Virginia.
- Atri, Padmini B. (1983) *Assistant Professor of Psychiatry* M.B.B.S., 1964, Patna University, India; M.S., 1972, Ranchi University, India.
- Atwill, William H. (1968) *Clinical Professor of Surgery* B.S., 1953, Virginia Military Institute; M.D., 1960, University of Virginia.
- Auletta, Ann G. (1992) *Assistant Professor of Radiology* B.S., 1984, M.A., 1988, University of Scranton; M.D., 1988, Jefferson Medical College.
- Aust, Toni A. (1992) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1974, East Tennessee State University; B.S., 1983, Medical College of Virginia of Virginia Commonwealth University.
- Austin, Leonard A. (1962) *Assistant Clinical Professor of Pediatrics* B.S., 1953, Richmond Professional Institute; M.D., 1959, Medical College of Virginia.
- Austin, Raymond F., Jr. (1989) *Assistant Professor of Radiology* B.A., 1956, Dartmouth College; M.D., 1959, Harvard University.
- Avent, Mitchell A. (1979) *Associate Clinical Professor of Pediatric Dentistry* B.S., 1972, University of Georgia; D.D.S., 1976, Medical College of Virginia of Virginia Commonwealth University.
- Ayes, Stephen M. (1985) *Professor of Internal Medicine, Director, Office of International Health Programs and Dean Emeritus, School of Medicine* B.A., 1951, Gettysburg College; M.D., 1955, Cornell University.
- Badger, Gary R. (1991) *Associate Clinical Professor of Pediatric Dentistry* B.S., 1966, Norwich University; D.D.S., 1970,

- Georgetown University; M.S., 1977, University of Missouri-Kansas City.
- Baffi, Charles R. (1988) *Associate Clinical Professor of Preventive Medicine and Community Health* B.A., 1969, St. John's University; M.P.H., 1975, City University of New York; Ph.D., 1979, University of Maryland.
- Bagwell, Charles E. (1993) *Professor of Surgery and Chair, Division of Pediatric Surgery* B.S., 1972, Wake Forest University; M.D., 1976, Bowman Gray School of Medicine.
- Bahlman, John H., Jr. (1977) *Assistant Clinical Professor of Pharmacy and Pharmaceutics* B.S., 1974, Medical College of Virginia of Virginia Commonwealth University.
- Bailey, Robert L., Jr. (1964) *Clinical Associate in Internal Medicine* B.S., 1933, University of South Carolina; M.D., 1937, University of Virginia.
- Baines, Edward F. (1990) *Assistant Professor of Anesthesiology* B.S., 1979, Old Dominion University; M.D., 1984, Medical College of Virginia of Virginia Commonwealth University.
- Baird, Charles L., Jr. (1981) *Associate Clinical Professor of Anesthesiology* B.S., 1951, University of Richmond; M.D., 1957, Medical College of Virginia.
- Baker, Charles A. (1991) *Instructor in Pharmacy and Pharmaceutics* B.S., 1972, Medical College of Virginia of Virginia Commonwealth University.
- Baker, Lee House (1993) *Clinical Instructor in Pediatric Dentistry* B.S., 1989, Delta State University; 1993, University of Tennessee.
- Ball, John J., III (1982) *Assistant Clinical Professor of Family Practice* B.S., 1972, Michigan State University; M.D., 1976, Medical College of Virginia of Virginia Commonwealth University.
- Ballentine, Lydia P. (1992) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1982, University of Mississippi; M.S., 1984, University of Houston.
- Ballentine, Rollin L. (1987) *Associate Professor of Pharmacy and Pharmaceutics* B.S., 1971, University of Cincinnati; Pharm.D., 1973, University of Michigan.
- Balseiro, Jesse (1988) *Assistant Professor of Radiology* B.S., 1976, University of Miami; M.D., 1981, Central University of the Caribbean.
- Balster, Robert L. (1973) *Professor of Pharmacology and Toxicology* B.S., 1966, University of Minnesota; Ph.D., 1970, University of Houston.
- Bampton, Anna E. H. (1992) *Assistant Clinical Professor of Radiology* B.S.E., 1987, Ph.D., 1991, Duke University; M.S.E., 1988, Stanford University.
- Banks, William L., Jr. (1965) *Professor of Biochemistry and Molecular Biophysics and Surgery* B.S., 1958, Ph.D., 1963, Rutgers University; M.S., 1961, Bucknell University.
- Barbaccia, Joseph G. (1984) *Assistant Clinical Professor of Pharmacy and Pharmaceutics* B.S., 1973, Rutgers University; Pharm.D., 1975, Philadelphia College of Pharmacy and Science.
- Barbatti, Carlin A. S. (1981) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1973, St. Louis College of Pharmacy.
- Barbour, Suzanne E. (1993) *Assistant Professor of Microbiology and Immunology* B.S., 1983, Cook College; Ph.D., 1990, Johns Hopkins University.
- Barker, Sandra B. (1990) *Associate Professor of Psychiatry* A.A., 1970, College of Orlando; B.A., 1972, University of Florida; M.S., 1974, M.D., 1978, Florida State University.
- Barker, Thomas C. (1967) *Dean, School of Allied Health Professions, and Professor of Health Administration* B.S., 1954, M.A., 1960, Ph.D., 1963, State University of Iowa.
- Barnes, Richard D. (1979) *Associate Clinical Professor of General Practice Dentistry* B.S., 1966, Virginia Polytechnic Institute and State University; D.D.S., 1977, Medical College of Virginia of Virginia Commonwealth University.
- Barnes, Robert F., Jr. (1977) *Associate Professor of General Practice Dentistry* B.A., 1967, University of Virginia; D.D.S., 1973, Medical College of Virginia of Virginia Commonwealth University.
- Bar-on, Miriam E. (1991) *Associate Professor of Pediatrics* B.S., 1977, University of Michigan; M.D., 1982, Hahnemann University.
- Barr, William H. (1972) *Professor and Chair, Department of Pharmacy and Pharmaceutics* B.S., 1960, Pharm.D., 1961, Ph.D., 1966, University of California - San Francisco.
- Barrell, Lorna M. (1982) *Associate Professor and Chair, Department of Community and Psychiatric Nursing* B.S., 1955, University of Minnesota; M.S., 1970, Ph.D., 1980, University of Illinois.

- Barrett, Charles H. (1980) *Assistant Clinical Professor of Pediatric Dentistry* B.A., 1975, University of Virginia; D.D.S., Medical College of Virginia of Virginia Commonwealth University.
- Barrett, Frances E. (1956) *Assistant Professor of Internal Medicine* M.D., 1949, University of Virginia.
- Barrett, Stephen L. (1993) *Clinical Instructor in Pharmacy and Pharmaceuticals* B.S., 1977, Medical College of Virginia of Virginia Commonwealth University.
- Barringer, Michael L. (1967) *Clinical Instructor in Pediatrics* B.A., 1952, University of North Carolina; M.D., 1962, Bowman Gray Medical School.
- Baskerville, Archer L. (1981) *Assistant Clinical Professor of Internal Medicine* B.S., 1969, M.D., 1973, Medical College of Virginia of Virginia Commonwealth University.
- Baskett, Sarah J. (1989) *Assistant Professor of Psychiatry* B.A., 1961, Earlham College; M.D., 1965, Indiana University.
- Bates, Robert H., Jr. (1983) *Assistant Clinical Professor of Family Practice* B.S., 1953, Roanoke College; M.D., 1957, Medical College of Virginia.
- Bates, Robley D., III (1987) *Clinical Instructor in Surgery* B.A., 1964, University of Virginia; M.D., 1972, Medical College of Virginia of Virginia Commonwealth University.
- Battista, Joseph Victor (1975) *Clinical Instructor in Obstetrics and Gynecology* A.B., 1964, Princeton University; M.D., 1968, Cornell University.
- Baughan, Linda W. (1986) *Assistant Professor of General Practice Dentistry* B.S., 1973, Christopher Newport College; M.Ed., 1978, Virginia Commonwealth University; D.D.S., 1983, Medical College of Virginia of Virginia Commonwealth University.
- Baumgarten, Clive Marc (1979) *Professor of Physiology* B.A., 1970, Ph.D., 1976, Northwestern University.
- Baxter, Marian L. (1993) *Clinical Instructor in Community and Psychiatric Nursing* B.S., 1983, Old Dominion University; M.S., 1985, Medical College of Virginia of Virginia Commonwealth University; M.A., 1992, University of Virginia.
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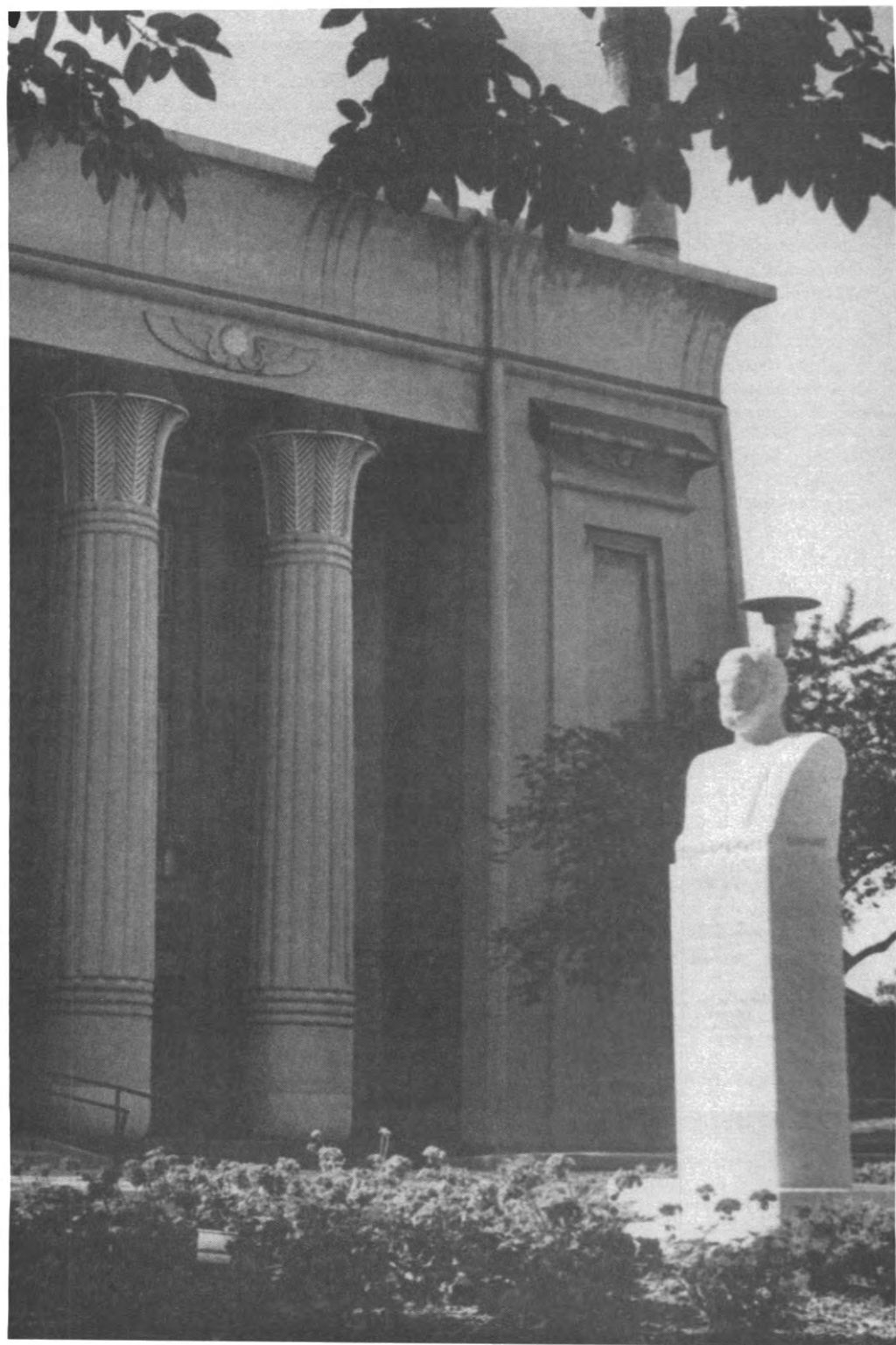
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- Cutler, S. James *Professor of Otolaryngology* B.S., 1941, Temple University; M.S., 1958, College of William and Mary.
- Edwards, Leslie E. *Professor of Physiology* B.S., 1937, M.S., 1939, Washington State University; Ph.D., 1944, University of Rochester.
- Egelhoff, William F. *Associate Professor of Gerontology* B.A., 1940, Williams College; M.B.A., 1943, Harvard University.
- England, Marshall C., Jr. *Professor and Chair, Department of Endodontics* B.S., 1954, Maryville College; D.D.S., 1958, M.S., 1967, Medical College of Virginia.
- Eshleman, John R. *Associate Professor and Chair, Department of Restorative Dentistry* D.D.S., 1960, Medical College of Virginia.
- Exley, Ethelyn E. *Associate Professor of Medical-Surgical Nursing* B.S., 1959, M.S., 1960, Ohio State University; Ed.D., 1972, Ball State University.
- Farrar, John T. *Professor of Internal Medicine* A.B., 1942, Princeton University; M.D., 1945, Washington University.
- Fiske, Russell H. *Associate Professor of Pharmacy* B.S., 1939, University of Michigan.
- Flowers, Ann M. *Associate Professor of Otolaryngology* B.S., 1943, Minnesota State College at Bemidji; M.S., 1949, University of Wisconsin; Ed.D., 1965, University of Virginia.
- Francis, Gloria M. *Professor of Community and Psychiatric Nursing* B.S., 1959, M.S., 1960, Ohio State University; M.S., 1970, Ph.D., 1972, University of Pennsylvania.
- Graham, A. Stephens *Associate Clinical Professor of Surgery* M.D., 1925, University of Minnesota.
- Guerry, DuPont, III *Professor of Ophthalmology* B.S., 1934, Furman University; M.D., 1938, University of Virginia; D.Med.Sc., 1944, Columbia University.
- Ham, William T., Jr. *Professor of Biophysics* B.S., 1931, M.S., 1933, Ph.D., 1935, University of Virginia.
- Harris, Thomas M. *Professor of Anatomy* B.A., 1949, Emory University; Ph.D., 1962, University of North Carolina.
- Haynes, Boyd W., Jr. *Professor of Surgery* M.D., 1941, University of Louisville.
- Hegre, Erling S. *Professor of Anatomy* B.A., 1931, Luther College; M.S., 1941, Ph.D., 1942, University of Minnesota.
- Hench, Miles E. *Professor of Pathology* B.S., 1941, Lawrence University; M.S., 1949, Ph.D., 1952, University of Michigan.
- Higgins, E. Stanley *Professor of Biochemistry and Molecular Biophysics* B.A., 1952, Alfred University; Ph.D., 1956, State University of New York at Syracuse.
- Hilliard, Norman L. *Assistant Professor of Pharmacy* B.S., 1953, Medical College of Virginia; M.Ed., 1970, Virginia Commonwealth University.
- Hirt, Susanne B. *Professor of Physical Therapy* B.S., 1948, University of Wisconsin; M.Ed., 1956, University of Virginia.
- Hoge, Randolph H. *Professor of Obstetrics and Gynecology* B.S., 1924, University of Virginia; M.D., 1928, Harvard University.
- Huf, Ernst G. *Professor of Physiology* Ph.D., 1931, M.D., 1937, University of Frankfurt, Germany.
- Irby, W. Robert *Professor of Internal Medicine* A.B., 1943, Hampden-Sydney College; M.D., 1948, Medical College of Virginia.
- Izard, Jessie V. *Professor of Medical Technology* B.S., 1942, Mississippi State College for Women; M.H., 1952, Charity Hospital; B.B.,

- 1954, Southern Baptist Hospital; M.Ed., 1972, Virginia Commonwealth University.
- Jarrell, George R. *Professor of Rehabilitation Counseling* B.S., 1949, M.R.C., 1961, University of Florida; Ph.D., 1970, University of South Carolina.
- Jessee, Robert W. *Professor of Preventive Medicine* M.D., 1946, University of Tennessee; M.P.H., 1952, Johns Hopkins University.
- Kay, Saul *Professor of Pathology* B.A., 1936, New York University; M.D., 1939, New York Medical College.
- Keefe, William E. *Associate Professor of Microbiology and Immunology* B.S., 1959, M.S., 1964, Virginia Polytechnic Institute and State University; Ph.D., 1967, Medical College.
- Lassiter, Robert A. *Professor of Rehabilitation Counseling* B.S., 1950, Murray State College; M.A., 1951, George Peabody College; Ph.D., 1969, University of North Carolina.
- Lowenthal, Werner *Professor of Pharmacy and Pharmaceutics* B.S., 1953, Union University; M.S., 1955, Ph.D., 1958, University of Michigan.
- Lower, Richard R. *Professor of Surgery* A.B., 1951, Amherst College; M.D., 1955, Cornell University.
- Lurie, Harry I. *Professor of Pathology and Medicine* B.S., 1932, M.B., Ch.B., 1936, University of the Witwatersrand, Union of South Africa.
- Mayo, Fitzhugh *Professor and Chair, Department of Family Practice* B.S., 1947, Virginia Polytechnic Institute; M.D., 1955, Medical College of Virginia.
- Mellette, Susan J. *Professor of Internal Medicine and Rehabilitation Medicine* A.B., 1942, Meredith College; M.D., 1947, University of Cincinnati.
- Modjeski, Philip J. *Professor of Restorative Dentistry* B.S., 1939, D.D.S., 1941, University of Illinois.
- Nakoneczna, Irene *Associate Professor of Pathology* M.D., 1949, Albert-Ludwigs University, Germany.
- Nooney, Thomas W., Jr. *Professor of Ophthalmology* B.A., 1942, Trinity College; B.S., 1948, O.D., 1949, Los Angeles College of Ophthalmology; M.S., 1961, University of Rochester; Ph.D., 1970, Medical College of Virginia of Virginia Commonwealth University.
- Norville, Jerry L. *Professor of Health Administration* B.A., 1961, University of Maryland; M.S., 1967, University of Colorado; M.B.A., 1972, Midwestern University.
- Odom, Donna C. *Associate Professor of Medical Technology* B.S., 1958, Madison College; M.S., 1977, Central Michigan University.
- Patterson, John L., Jr. *Professor of Internal Medicine* A.B., 1935, Princeton University; M.D., 1939, Medical College of Virginia; M.S., 1943, University of Virginia.
- Prest, A. Patrick L., Jr. *Professor of Patient Counseling* B.S., 1951, Lehigh University; M.Div., 1954, Episcopal Theological School; D.D., 1977, University of the South.
- Ray, Edward S. *Professor of Medicine* A.B., 1932, Randolph-Macon College; M.D., 1936, University of Virginia.
- Rothberg, Simon *Professor of Dermatology and Biochemistry* B.S., 1948, Columbia University; M.S., Ph.D., 1956, Georgetown University.
- Salley, John J. *Professor of Oral Pathology and Pathology* D.D.S., 1951, Medical College of Virginia; Ph.D., 1954, University of Rochester; D.Sc., 1975, Boston University.
- Schumann, Morton D. *Associate Professor of Psychiatry* A. B., 1947, M.S.W., 1951, West Virginia University.
- Shadomy, H. Jean *Professor of Microbiology and Immunology* B.A., 1956, M.A., 1958, Ph.D., 1963, University of California-Los Angeles.
- Shepard, Felix E. *Associate Professor of Restorative Dentistry* B.S., 1955, University of Richmond; D.D.S., 1957, Medical College of Virginia.
- Smith, J. Doyle *Professor of Pharmaceutical Chemistry* B.S., 1942, M.S., 1944, Ph.D., 1946, University of Virginia.
- Smith, Maynard P. *Clinical Professor of Otolaryngology* B.S., 1934, Randolph-Macon College; M.D. 1938, University of Virginia.
- Spencer, Frederick J. *Professor of Preventive Medicine and Associate Dean, School of Medicine* M.B., B.S., 1945, University of Durham, U.K.; M.P.H., 1958, Harvard University.
- Stepka, William *Professor of Pharmacy and Pharmaceutics* B.A., 1946, University of Rochester; Ph.D., 1951, University of California-Berkeley.

- Thompson, W. Taliaferro, Jr. *Professor of Medicine* A.B., 1934, Davidson College; M.D., 1938, Medical College of Virginia.
- Townsend, J. Ives *Associate Professor of Human Genetics* B.S., 1941, University of South Carolina; Ph.D., 1952, Columbia University.
- Vennart, George P. *Professor and Chair, Department of Pathology* A.B., 1948, Wesleyan University; M.D., 1953, University of Rochester.
- Wasserman, Albert J. *Professor of Internal Medicine and Chair, Division of Clinical Pharmacology; Executive Associate Dean and Associate Dean for Curriculum, School of Medicine* B.A., 1947, University of Virginia; M.D., 1951, Medical College of Virginia.
- Weaver, Warren E. *Professor of Pharmaceutical Chemistry and Dean, School of Pharmacy* B.S., 1942, Ph.D., 1947, University of Maryland.
- Welshimer, Herbert J. *Professor of Microbiology and Immunology* B.S., 1943, Ph.D., 1947, Ohio State University.
- Wiebusch, F.B. *Professor of Periodontics* B.B.A., 1943, D.D.S., 1947, University of Texas.
- Williams, Carrington, Jr. *Clinical Professor of Surgery* B.A., 1938, University of Virginia; M.D., 1942, Harvard University.
- Wolfe, Eleanor V. *Associate Professor of Occupational Therapy* B.S., 1945, University of North Carolina; M.A., 1951, Texas Women's University.
- Wood, John H. *Professor of Pharmacy and Pharmaceutics* B.Sc., 1946, M.Sc., 1947, University of Manitoba; Ph.D., 1950, Ohio State University.
- Wood, Maurice *Professor of Family Practice* M.B., B.S., 1945, Durham University, U.K.
- Woods, Lauren A. *Professor of Pharmacology and Toxicology and Vice-President for Health Sciences* B.S., 1939, Dakota Wesleyan University; Ph.D., 1943, Iowa State University; M.D., 1949, University of Michigan.
- Wright, Keith C. *Professor of Rehabilitation Counseling* A.B., 1949, M.A., 1950, Marshall College.
- Yingling, Doris B. *Professor and Dean, School of Nursing* B.S., 1944, University of Oregon; M.A., 1951, Ed.D., 1956, University of Maryland.
- Young, Nelson F. *Professor of Pathology* B.S., 1935, University of Washington; Ph.D., 1945, New York University.



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## **Rights of Students Under the Family Educational Rights and Privacy Act**

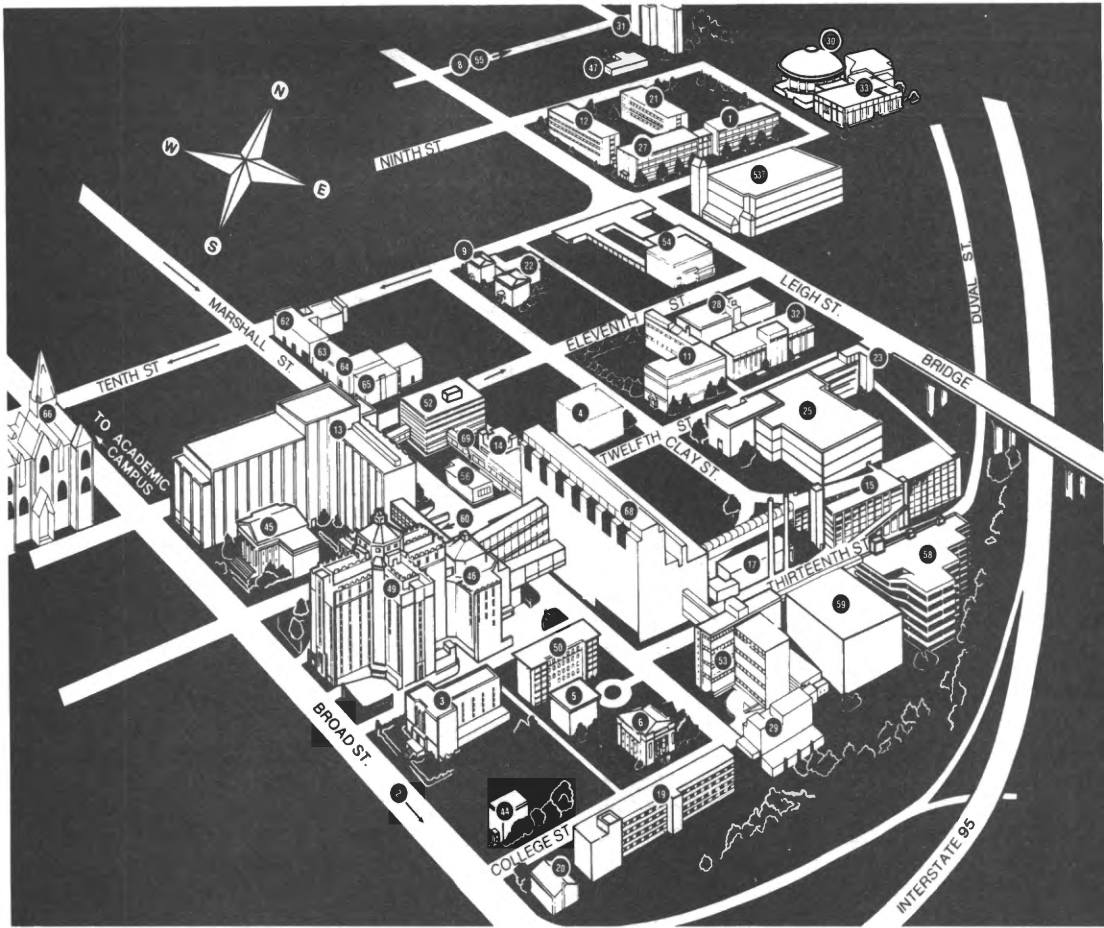
**P**ursuant to a federal statute enacted to protect the privacy rights of students (Family Educational Rights and Privacy Act of 1974, as amended, enacted as Section 438 of the General Education Provisions Act), eligible students of Virginia Commonwealth University are permitted to inspect and review education records of which the student is the subject. A list of education records maintained by the University is available from University Enrollment Services/Records and Registration. A statement of University policy concerning inspection and disclosure of education records has been formulated in compliance with the federal statute. Copies of the policy are also available from University Enrollment Services/Records and Registration.

Generally, the Act provides that no personally identifiable information will be disclosed with-

out the student's consent, except for directory information and information to other school officials with a legitimate educational interest. When personally identifiable information, other than directory information, is disclosed, a record will be maintained of these disclosures. This record is also available for inspection and review by the student.

If an eligible student feels that his or her education record is inaccurate, misleading, or otherwise in violation of the student's privacy or other rights, the student may request an amendment to the record.

Should the University fail to comply with the requirements of the Act, the student has the right to file a complaint with the Family Policy and Regulations Office, U.S. Department of Education, Washington, D.C. 20202.



**Code Building**

**Medical College of Virginia Campus Location**

- 1 Bear Hall, 10th & Leigh Sts.
- 3 Nursing Education Building, 1220 E. Broad St.
- 4 Robert Blackwell Smith, Jr., Building, 410 N. 12th St.
- 5 Dooley Building, 1225 E. Marshall St.
- 6 Egyptian Building, 1223 E. Marshall St.
- 7 Pathological Incinerator, 316 College St.
- 8 Facilities Management Shops Building, 659 N. 8th St.
- 9 Leigh House, 1000 E. Clay St.
- 11 McGuire Hall, 1112 E. Clay St.
- 12 McRae Hall, 10th & Leigh Sts.
- 13 Sanger Hall, 1101 E. Marshall St.
- 14 Ambulatory Care Center, 408 N. 12th St.
- 15 MCV/VCU Visitor/Patient Parking Deck, 1220 E. Clay St.
- 17 Central Heating & Power Plant, 400 N. 13th St.
- 18 MCV Alumni House, 1105 E. Clay St.
- 19 Randolph-Minor Hall, 307-15 College St.
- 20 Randolph-Minor Annex, 301 College St.

- 21 Rudd Hall, 10th & Leigh Sts.
- 22 Sheltering Arms Building, 1008 E. Clay St.
- 23 Strauss Research Laboratory, 527 N. 12th St.
- 24 Monumental Church, 1224 E. Broad St.
- 25 Tompkins-McCaw Library, 509 N. 12th St.
- 27 Warner Hall, 10th & Leigh Sts.
- 28 Wood Memorial Building, 521 N. 11th St.
- 29 Massey Cancer Center, 401 College St.
- 30 Larrick Student Center, 641 N. 8th St.
- 31 Cabaniss Hall, 600 N. 8th St.
- 32 Lyons Memorial Building, 520 N. 12th St.
- 33 Gymnasium, 9th & Leigh Sts.
- 38 Consolidated Lab. Building, 9 N. 14th St.
- 44 Newton House, College & Broad Sts.
- 45 First Baptist Church, 323 N. 12th St.
- 46 A. D. Williams Memorial Clinic, 1201 E. Marshall St.
- 47 VCU Day Nursery, 610 N. 9th St.
- 49 West Hospital, 1200 E. Broad St.

- 50 East Hospital, 1215 E. Marshall St.
- 52 Nelson Clinic, 401-09 N. 11th St.
- 53 North Hospital, 1300 E. Marshall St.
- 54 Virginia Treatment Center, 515 N. 10th St.
- 55 MCV Hospitals Heliport
- 58 Faculty/Staff Parking Deck (Lot D), 515 N. 13th St.
- 59 MCV Hospital Clinical Support Center, 403 N. 13th St.
- 60 George Ben Johnston Auditorium, 305 N. 12th St.
- 61 Richmond Plaza Building, 1105. 7th St.
- 62 Virginia Mechanics Institute Building, 1000 E. Marshall St.
- 63 Zeigler House, 1006-08 E. Marshall St.
- 64 Samuel Putney House, 1010 E. Marshall St.
- 65 Stephen Putney House, 1012 E. Marshall St.
- 68 Main MCV Hospital, 401 N. 12th St.
- 70 Faculty/Staff Parking Deck (Lot E) N. 12th St.
- 121 Finance Building, 327 W. Main St.

## ICV CAMPUS

### academic

- 13 Academic Computing, Department of
- 13 Academic Pathology
- 64 Administrative Offices, MCV Campus
- 11 Adult Learning Center
- 3 Adult Health Nursing, Department of
- 6 Allied Health Professions, Administrative Offices
- 6 Allied Health Professions, School of
- 13 Anatomy, Department of
- 49 Anesthesiology, Department of
- 6 Baruch Auditorium
- 1 Bear Hall, Dormitory
- 13 Biochemistry & Molecular Biophysics, Department of
- 13 Biostatistics, Department of
- 32 Business Offices, MCV Student Accounts
- 121 Business Offices, University
- 31 Cabaniss Hall
- 45 Campus Room Restaurant
- 49 Cardiac & Thoracic Surgery
- 13 Cardiology
- 13 Cardiopulmonary Labs & Research
- 22 Center on Aging
- 20 Clinical Radiation Sciences (SAHP), Department of
- 13 Preventive Medicine/Community Health, Department of
- 3 Community & Psychiatric Nursing, Department of
- 6 Continuing Medical Education
- 32 Dental Hygiene Program
- 32 Dentistry, Administrative Offices
- 28 Dentistry, School of
- 13 Dermatology, Department of
- 31 Cabaniss Hall, Dormitory
- 21 Rudd Hall, Dormitory
- 6 Egyptian Building
- 13 Endocrinology & Metabolism
- 32 Endodontics, Department of
- 49 Family Practice, Department of
- 45 Financial Aid Office, Student, MCV
- 13 Gastroenterology
- 32 General Practice Dentistry, Department of
- 60 George Ben Johnston Auditorium
- 64 Gerontology
- 13 Graduate Studies, School of
- 30 Gymnasium
- 20 Health Administration, Department of
- 64 Health Sciences, Vice-President for
- 13 Hematology & Oncology
- 63 Hospitality House, MCVH
- 1 Housing, Division of Student Services
- 13 Human Genetics, Department of
- 13 Immunology & Connective Tissue Disease
- 13 Infectious Disease 1
- 1 Innovative Technology, Center for
- 13 Internal Medicine, Department of
- 30 Larrick Student Center
- 38 Legal Medicine, Department of
- 9 Leigh House
- 25 Library, Tompkins-McCaw
- 32 Lyons Dental Building
- 3 Maternal-Child Nursing, Department of
- 11 McGuire Hall
- 12 McRae Hall, Dormitory
- 13 Medical Oncology
- 4 Medicinal Chemistry, Department of
- 13 Medicine, School of

- 13 Microbiology & Immunology, Department of
- 13 Nephrology
- 13 Neurology, Department of
- 13 Neuropathology
- 49 Neurosurgery, Division of
- 22 Newton House
- 4 Nurse Anesthesia, Department of
- 3 Nursing Administration & Information Systems, Department of
- 3 Nursing Education Building
- 3 Nursing, School of
- 13 Obstetrics & Gynecology, Department of
- 62 Occupational Therapy (SAHP), Department of
- 32 Oral Pathology, Department of
- 32 Orthodontics, Department of
- 9 Parking Office
- 13 Pathology, Department of
- 44 Patient Counseling, Program of
- 13 Pediatrics, Department of
- 32 Periodontics, Department of
- 62 Personnel Department
- 4 Pharmacology & Toxicology, Department of
- 4 Pharmacy & Pharmaceuticals, Department of
- 4 Pharmacy, School of
- 11 Physical Therapy (SAHP), Department of
- 13 Physiology, Department of
- 50 Preventive Medicine, Department of
- 32 Prosthodontics, Department of
- 49 Psychiatry, Department of
- 49 Pulmonary Disease
- 13 Radiation Biology
- 13 Radiation Physics
- 49 Radiation Sciences (SAHP), Department of
- 13 Radiology, Department of
- 20 Randolph-Minor Annex
- 6 Rehabilitation Medicine, Department of
- 13 Research & Graduate Studies, VCU Office of
- 55 Richmond Academy of Medicine
- 4 Robert Blackwell Smith, Jr., Building
- 21 Rudd Hall, Dormitory
- 64 Samuel Putney House
- 13 Sanger Hall
- 22 Sheltering Arms Building
- 13 Sponsored Programs Administration
- 65 Stephen Putney House
- 23 Strauss Research Laboratory
- 32 Student Accounts
- 27 Student Affairs, Office of the Dean
- 30 Student Cafeteria
- 13 Surgery, Department of
- 13 Surgical Pathology
- 61 Telecommunications
- 25 Tompkins-McCaw Library
- 45 University Counseling Services
- 13 University Enrollment Services/Admissions, Records & Registration
- 13 University Media Services Center
- 52 Urology
- 62 Virginia Mechanics Institute Building
- 27 Warner Hall, Dormitory
- 28 Wood Memorial Building
- 63 Zeigler House

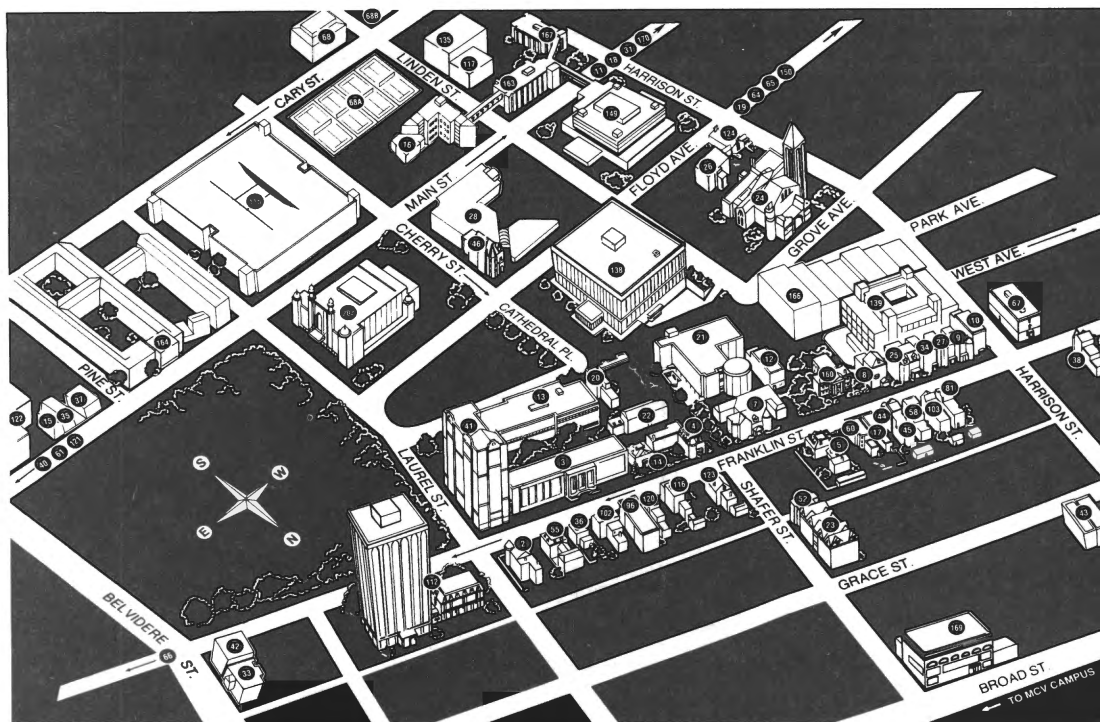
### Hospitals

- 46 A. D. Williams Memorial Clinic
- 68 Administration, MCVH
- 68 Admitting Office, MCVH
- 19 Adolescent Medicine Clinic

- 14 Ambulatory Care Center
- 14 Ambulatory Surgery
- 122 Associated Physicians
- Administrative & Main Office
- 52 Associated Physicians Information
- 59 Business Offices, Hospital
- 8, 49 Cashier, MCVH
- 54 Child Psychiatry
- 59 Clinical Pathology
- 50 Clinical Pharmacology
- 49 Clinical Psychology
- 59 Clinical Support Center, MCVH
- 32 Dental Clinics
- 28 Dental Faculty Practice Clinics
- 68 Diagnostic Radiology
- 50 East Building (St. Philip)
- 68 Emergency Services
- 52 Health Testing Center
- 49 Information, Patient
- 68 Information, Patient
- 68 Main Hospital
- 29 Massey Cancer Center
- 14 MCV Audiology Clinic
- 14 MCV Eye Clinic
- 52 Nelson Clinic
- 53 North Hospital (E. G. Williams)
- 53 Nuclear Medicine
- 19 Nursing Education, Department of, MCVH
- 49 Nursing Services Personnel Office, MCVH
- 53 Occupational Therapy, Department of, MCVH
- 53 Oncology Clinic
- 52 Ophthalmology, Department of
- 32 Oral & Maxillofacial Surgery, Department of
- 52 Orthopedic Surgery
- 14 Otolaryngology, Department of
- 68 Patient Accounting
- 68 Patient Resources
- 50 Pediatric Cardiology
- 32 Pediatric Dentistry, Department of
- 19 Pediatric Neurology
- 52 Pediatric Surgery
- 19 Pediatrics Clinics
- 49 Personnel Department, MCVH
- 52 Plastic Surgery
- 19 Psychiatric Outpatient Clinic
- 29 Radiation Therapy
- 19 Randolph-Minor Hall
- 50 Sickie Cell Anemia Clinic
- 52 Surgical Oncology
- 52 Trauma/General Surgery
- 52 Vascular/General Surgery
- 49 West Hospital (MCV Hospital)

### Auxiliary

- 49 Alumni Association, MCV
- 52 Bank of Virginia Branch
- 11 Bookstore
- 22 Campus Police
- 122 Computer Center 52 11th Street Cafe
- 49 Employee Health Services
- 13 Environmental Health & Safety Office
- 9 Facilities Management
- 8 Facilities Management Shops Building
- 65 MCV Foundation
- 55 MCV Hospitals Heliport
- 70, 58 Parking Deck, Faculty/Staff
- 15 Parking Deck, MCV/VCU Visitor/Patient
- 52 Parking, Nelson Clinic Patients
- 62 Parking Office, MCV
- 62 Post Office
- 45 Print Shop
- 47 VCU Day Nursery



### Code Building

- 2 Williams House, 800 W. Franklin St.
- 3 Franklin Street Gymnasium, 817 W. Franklin St.
- 4 Founders Hall, 827 W. Franklin St.
- 5 President's House, 910 W. Franklin St.
- 7 Ginter House, 901 W. Franklin St.
- 8 Anderson House, 913 W. Franklin St.
- 9 Kearney House, 921 W. Franklin St.
- 10 Scherer Hall, 923 W. Franklin St.
- 11 1814 W. Main St.
- 12 Anderson Gallery, 907 1/2 W. Franklin St.
- 13 Life Sciences Building, 816 Park Ave.
- 14 Ritter-Hickok House, 821 W. Franklin St.
- 15 609 W. Main St.
- 16 General Purpose Academic Building, 901 W. Main St.
- 17 McAdams House, 914 W. Franklin St.
- 18 1326-28 W. Main St.
- 19 1315 Floyd Ave.
- 20 Adkins House, 824 Park Ave.
- 21 Hibbs Building, 900 Park Ave.
- 22 Shafer Street Playhouse, 221 N. Shafer St.
- 23 Lafayette Hall, 312 N. Shafer St.
- 24 VCU Music Center, 1015 Grove Ave.
- 25 Stark House, 915 W. Franklin St.
- 26 Education Annex, 109 N. Harrison St.
- 27 Younger House, 919 W. Franklin St.
- 28 Student Commons, 907 Floyd Ave.

- 31 1312 W. Main St.
- 32 Treehouse Apartments, 5701 Pony Farm Dr.
- 33 Sports Medicine Center, 104 N. Belvidere St.
- 34 Bowe House, 917 W. Franklin St.
- 35 611 W. Main St.
- 36 Thurston House, 808 W. Franklin St.
- 37 621 W. Main St.
- 38 Meredith House, 1014 W. Franklin St.
- 40 401 E. Main St., Purchasing
- 41 Johnson Hall, 801 W. Franklin St.
- 42 Lindsay House, 600 W. Franklin St.
- 44 Millhiser House, 916 W. Franklin St.
- 45 916 W. Franklin St. (rear)
- 46 Sitterding House, 901 Floyd Ave.
- 52 310 N. Shafer St.
- 55 White House, 806 W. Franklin St.
- 58 Stokes House, 918 W. Franklin St.
- 60 Stagg House, 912 W. Franklin St.
- 64 1128 Floyd Ave.
- 65 107 N. Morris St.
- 66 Holiday Inn, 301 W. Franklin St.
- 67 Raleigh Building, 1001 W. Franklin St.
- 68 Cary Street Recreational Facilities, 911 W. Cary St.
- 81 Buford House, 922 W. Franklin St.
- 96 Franklin Terrace, 812-14 W. Franklin St.
- 102 Hunton House, 810 W. Franklin St.
- 103 Valentine House, 920 W. Franklin St.

### Academic Campus Location

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- 115 VCU Public Parking
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- 117 Physical Plant Warehouse, 6 S. Linden St.
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- 121 327 W. Main St., Financial Operations
- 122 Fine Arts Center, 601 W. Main St.
- 123 Blanton House, 826-28 W. Franklin St.
- 124 VCU Meeting Center, 101 N. Harrison St.
- 135 Physical Plant Shops, 10 S. Linden St.
- 138 James Branch Cabell Library, 901 Park Ave.
- 139 Pollak Building, 325 N. Harrison St.
- 149 School of Business, 1015 Floyd Ave.
- Business School Auditorium, 14 N. Linden St.
- 150 VCU Dance Center, 10 N. Brunswick St.
- 160 Bocock House, 909 W. Franklin St.
- 163 Oliver Hall-Physical Sciences Wing, 1001 W. Main St.
- 164 Gladding Residence Center, 711 W. Main St.
- 166 Performing Arts Center, 922 Park Ave.
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- 169 1001 W. Broad St.
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- 202 Mosque

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